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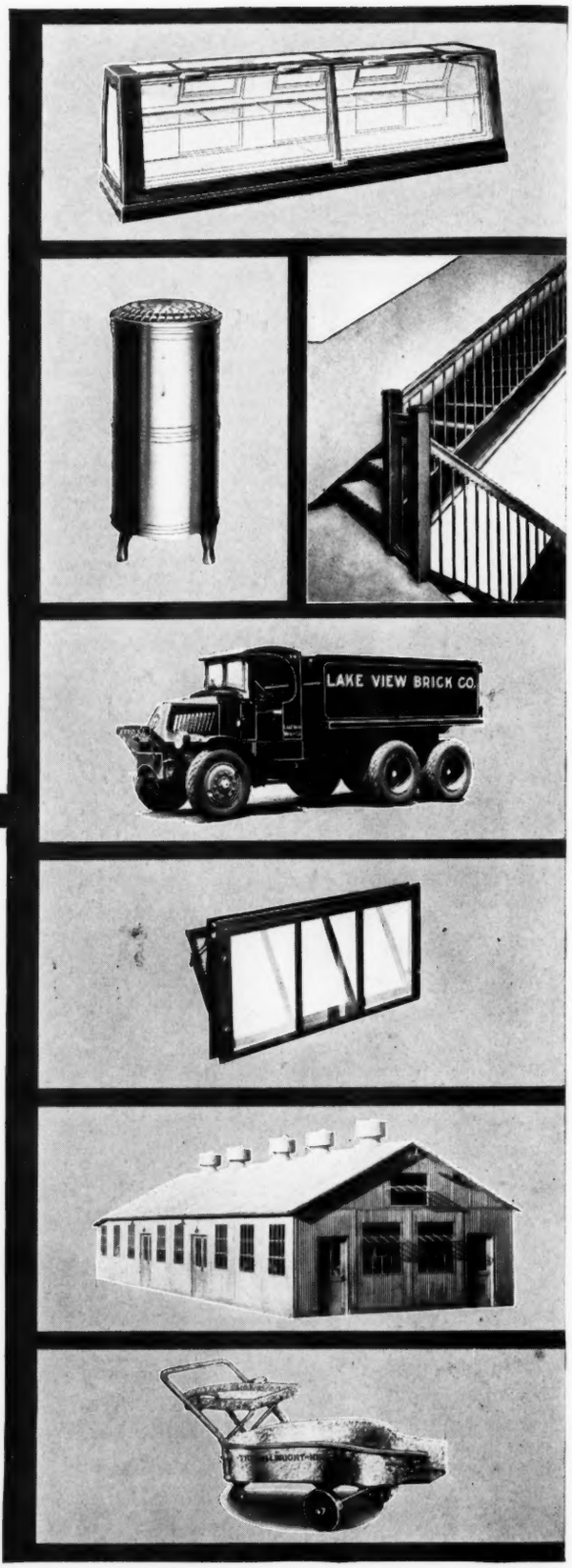

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AMERICAN ARTISAN

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VOL. 101 ▼ No. 16

OCTOBER, 1932

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Samuel R. Lewis, who wrote the book, is a pioneer in the development of the design of plants cooling for comfort, is past president of the American Society of Heating and Ventilating Engineers, and is a consulting engineer with an impressive record of large and small heating and cooling installations to his credit. Out of these achievements has come the exhaustive knowledge and qualifying experience which makes Mr. Lewis such an admirable choice to write this authoritative book on AIR CONDITIONING FOR COMFORT.

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CONTENTS OF AIR CONDITIONING FOR COMFORT

Chapter 1.—Explanation of Terminology.
Chapter 2.—Instruments of Service in Air Conditioning.
Chapter 3.—Relation of the Human Body to Air Conditioning.
Chapter 4.—The Influence of the Type of Heating System Upon Air Conditioning.
Chapter 5.—Heat Transmission Through Building Materials.
Chapter 6.—Calculations for Air Conditioning Requirements.
Chapter 7.—Sunshine, Evaporation, Air Leakage and Lighting.
Chapter 8.—Air Distribution Within Rooms of Cooling Systems.
Chapter 9.—Controlling the Temperature in Air Conditioning Systems.
Chapter 10.—Water Circulation in Heating and Cooling Systems.
Chapter 11.—Air Ducts in Heating and Cooling Systems.
Chapter 12.—Computations for an Actual Design.

36 Tables, 94 Figures, Charts and Diagrams in This New Book, of Which the Following Are Examples:

Figure 4—Capillary type of humidifier.
Figure 11—Diagram of silica gel cycle for removing moisture from air.
Figure 16—Psychometric chart with comfort zone.
Figure 21—Utilization of city water for house cooling.
Figure 25—Coefficients of heat transmission through building materials.
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Figure 62—Layout of a simple parallel return heating cooling plant.
Table 1—Mixtures of air and saturated water vapor.
Table 36—Conversion Tables.

ANSWERS SCORES OF SUCH QUESTIONS AS THESE:

—What are the strong points of the different cooling compounds? (See page 26)
—What are the different humidifying devices available?—dehumidifying devices? (See page 8)
—What is relation of the human body to temperature—moisture — motion — chemicals — radiation — convection—evaporation—sensible and latent heat? (See page 42)
—What cooling system will work best with the various heating installations? (See page 60)
—How do you calculate air conditioning requirements? (See chapter 6)
—What is the reasonable temperature and humidity for satisfactory artificial cooling of living quarters? (See table 2)

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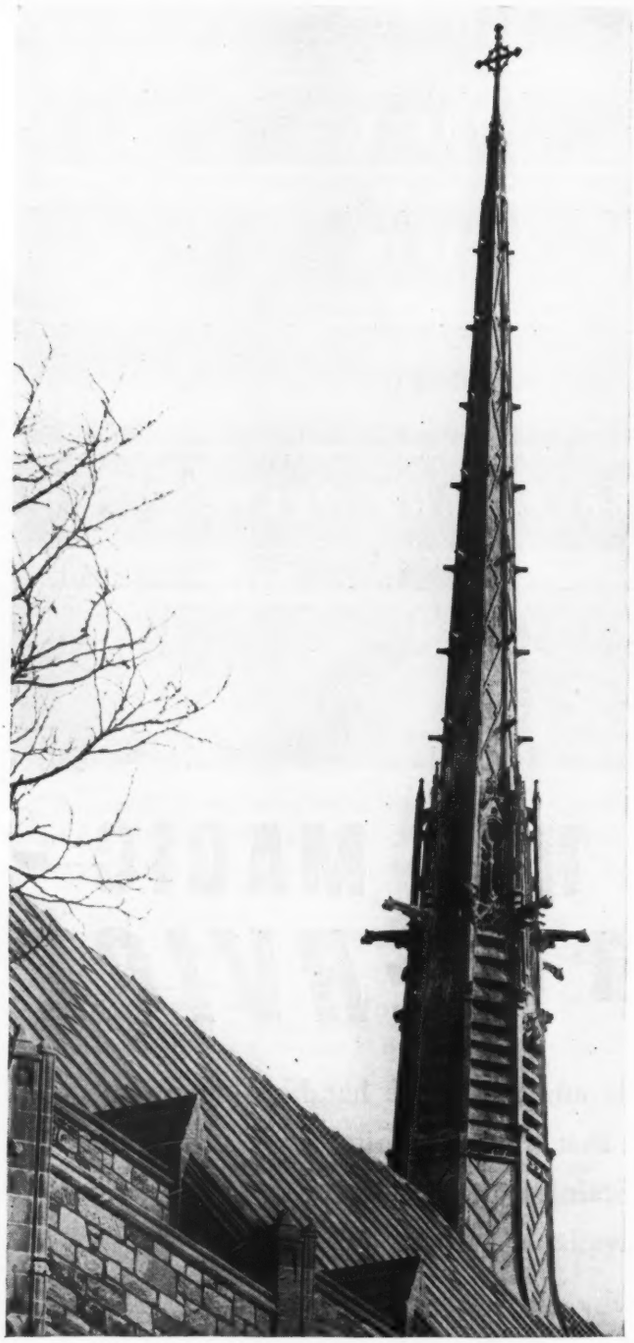

The ornamental spire and the batten-seam roof on the Metropolitan M. E. Church, Washington, D. C. are so interesting from the sheet metal point of view, that we prefer to show them in close up . . . rather than show the church itself. Architect: Sundt & Wenner . . . General Building Contractor: Stoffiet and Tillotson . . . Sheet Metal Contractor: Chew-Bittel Company. All three of Philadelphia, Pa.

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VOLUME 101 AMERICAN ARTISAN NUMBER 16

WARM AIR HEATING • SHEET METAL CONTRACTING • AIR CONDITIONING

Credits, Oil Burners and Firepots

Credits Must Be Watched

The slow liquidation of outstanding indebtedness which has been one of the most noticeable characteristics of the last three years should impress on furnace and sheet metal men the importance of watching their credit and time payment accounts. In many lines of business slow liquidation has been one of the real obstacles to new sales and better profits.

"If a man comes into my store and says he needs some new parts for his furnace," writes one furnace man, "my policy is to tell him just what these parts will cost and require a down payment sufficient to cover the cost of these parts. I'll gamble on the labor, if I know the buyer, but I can't extend my obligations to include repair parts."

Unquestionably this furnace man is not the only one who has adopted a similar policy. The experience of most dealers in ordering parts which stand on the floor waiting for the buyer to come in, or the trouble and delay encountered in getting the money after the job is completed has necessitated such stringent policies.

There is no sound reason why furnace men should have to cover slow pay from personal assets when the same buyers are accustomed to pay immediately for most of the other services or material which they buy from stores, garages, and dispensers of commodities.

Watching credits and compelling the buyer to go half way in assuming the risk of delayed payment should be looked upon as one development which will operate for sounder business in the future.

◆

How About Oil Burners

There is a surprising number of furnace and sheet metal contractors, especially in the smaller communities, now engaged in selling oil burners. True, most of these furnace men do not sell dozens of burners a year, but in the aggregate they constitute a very appreciable source of distribution.

It is safe to say that manufacturers of oil burners are aware of this potential sales outlet. These manufacturers may be more impressed or more anxious to have strictly oil burner outlets, but the smaller communities do not offer a sales field large enough for many burner dealers.

A survey recently completed shows that about 60 per cent of all burners sold today are distributed through heating contractors whose individual sales may be small, but whose total accounts for this surprising percentage.

"I like to sell burners," says one furnace man, "but I don't like to be called out of bed in the middle of a cold night to tell Mrs. Jones that she forgot to order oil and her tank is dry. Besides, I can't get any money for these service calls."

The thing this man has overlooked is that each sale of a burner equals the profit of a good furnace job and that if he wants to make money he should expect to give some service in return. He should also explain that service costs money.

Oil burner experience has shown that the heating man who understands heating plants and who is not afraid to tell Mrs. Smith that an oil burner won't heat that back room which has always been cold or tell Mr. Brown that his floor drafts cannot be cured by the burner, but by the addition of another return air, makes the very best outlet for satisfactory oil burner sales. Too many burners have been sold as cure-alls for cold rooms, floor drafts, Johnny's running nose and so on, when the truth is the old system didn't heat and can't be cured by the addition of a burner without other changes.

For the furnace man looking for a product which can be sold at a good profit and for a field in which his experience and knowledge are valuable an oil burner agency should be attractive.

◆

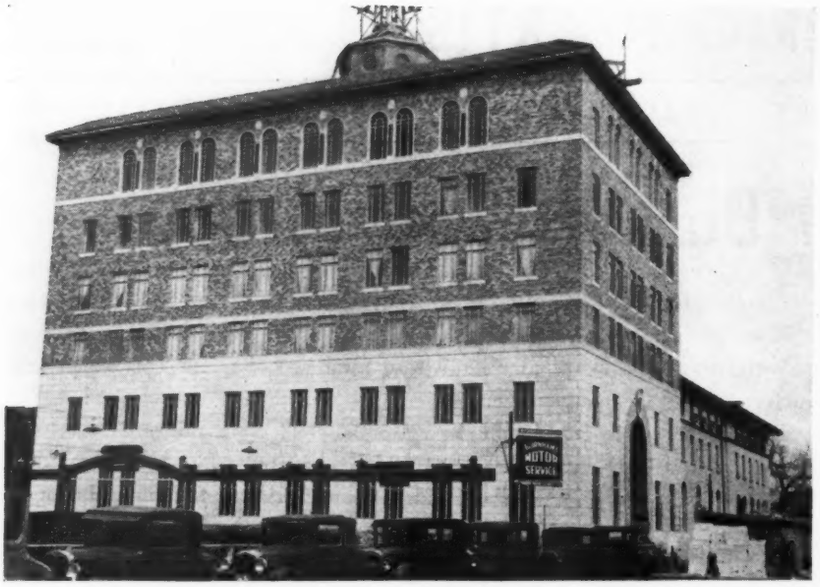
Cracked Firepots

An astonishing number of furnace men tell us of calls to repair furnaces where the owner can't afford to buy new parts and insists on having the cracks cemented.

Now we know that cementing cracks is a makeshift operation which may last the season through or may fall out with the first heavy firing. Nevertheless, the owner can't buy new parts and he must have heat.

Such a prospect should be told exactly what can be expected and an impression established which will make the dealer the logical man to call when the cement pulls free or the owner gathers enough money to buy new parts.

Such small sales may be sour apples, but they also lead to future sales if the contact is correctly established.



The cornice is the distinguishing ornamental feature of the rather severe architecture. With the deep projection and ornamented soffit the cornice fulfills its architectural mission

This view shows the bronze ornaments in the soffit and formed panels in the facia. The brackets and molding course were brake and hand formed

Hard Lead Cornice Crowns Albuquerque Post Office

IN Albuquerque, New Mexico, the new federal post office and court house has a hard lead and bronze cornice which has been declared one of the outstanding metal contracts of recent months and one of the most interesting fabrication projects in the southwest.

The cornice was fabricated and erected by F. B. Phillips, Albuquerque sheet metal contractor, whose slogan is "If it is made of sheet metal we make it." Mr. Phillips, in addition to his architectural work also does ventilation, skylight, tank, slate roofing, furnace, restaurant, and metal roofing work of all kinds.

The cornice is interesting because it combines hard lead sheets with cast bronze ornaments in the soffit and special fabrication of the lead work. Fabrication and layout was done by Mr. Phillips and Eddie Graeff, his foreman.

Mr. Phillips describes the work as follows:

"More than six tons of hard lead were used on this job. The ornaments are cast bronze. This is the only cornice of its kind in our part of the country and has been complimented highly. No solder or burning was done, since all seams were locked with the bronze panels pressed into position by hand. The sheet lead panels of the facia were also pressed. No nails were used, because all joints were locked and all sections were bolted into place.

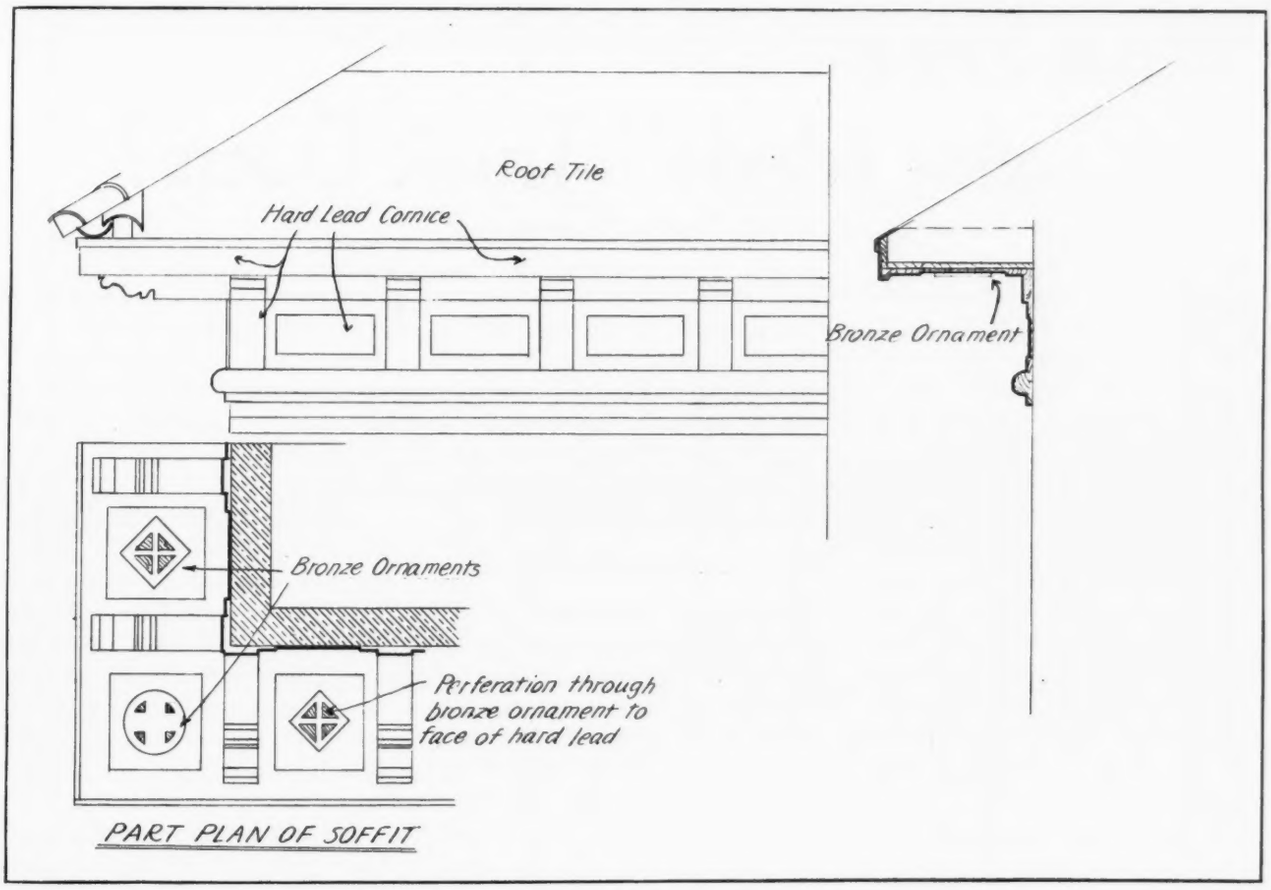
"The cornice backup is wood of special framing for this job. Lookouts are also wood. The roof above the cornice is straight barrel mission tile.

"The material used is hard lead weighing three pounds to the square foot. Sheets were cut in lengths suitable for forming and erection, but no sheet was more than four feet in length.

"In forming the sheets we had to adjust the brake to accommodate the thickness of the lead sheet which is a somewhat looser setting than that ordinarily used for iron or copper. Specifications called for bends not sharper than the thickness of the sheet, so we set the brake to give a bend radius equal to the thickness of the sheet.

"Because nailing was prohibited and because seams were not burned, we had to pay especial attention to the seams, cleats and methods of locking. We were careful to use these cleats in such a manner that expansion and contraction were taken care of and to see that no strain was put on the sheets or joints.

"The sheets were fastened at all seams with cleats of 16-ounce soft



The drawing above shows most of the details of the various parts of the cornice; also the design of the members and ornaments

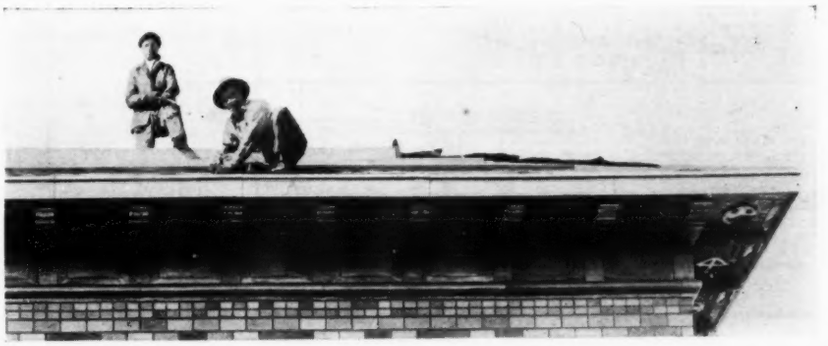
copper or 3-pound hard lead fastened, in turn, to the backup by copper nails. On horizontal seams short cleats are used placed on approximately 10-inch centers. On vertical seams the cleats are continuous and nailed in a similar manner. The lower edge of the cornice was caulked into a stone reglet with a continuous cleat of hard lead.

"All sheets were joined together by means of locked seams. In general, these seams had a turnover of about three-quarters of an inch. The clearance between the edge of one sheet and the bend of the other was held at one-eighth of an inch. The seams were neatly locked, but not hammered down tight. One loop was filled with a non-hardening compound."

Left is a closeup of the soffit, dentil course, and bed molding. The bronze ornaments were pressed into their panels and bolted fast

The photographs and the detail drawings show most of the features of the design and application. The photographs show the general appearance of the soffit and fascia as it looks from the working scaffold.

The facia panels, according to Mr. Phillips' description, were all shop fabricated with each panel formed in one sheet. These panels were finished with sufficient metal to form the seams at the ends and to lock with the molding course below and the bracket course above. These pictures, together with the detail drawings, also show how the panels of lead were formed to take the cast ornaments.



Putting the finishing touches to the cornice. No burning was done since all sections were locked as shown in the photographs

What Price "Tailor Made" Trunk Ducts?

By Platte Overton

ONE of the popular objections to the trunk line system is the expense. Many contractors, when questioned regarding an average cost, do not seem to have any definite idea of the per pound cost of such systems. The replies range from 35 to 70c per pound and are of course guesses. The writer—a practical sheet metal worker—offers this article for the benefit of those contractors who have recently entered the air conditioning and mechanical warm air heating field. The average ventilation contractor is familiar with such practice.

No doubt some readers will ridicule the practice of figuring or estimating such work on the pound basis, but we will consider the included system on this basis as it is average. Where more or less hand made fittings are included, the price may be increased or reduced. It should be understood that the price is based on the assumption that first class mechanics are employed.

The Layout Sketch

The prime requirement is the right start. We will assume that the house is stacked and ready for the trunk lines and branches. Our furnace being located, the mechanic, layout man, or cutter, goes to the job and returns with a sketch as shown in Figure 1. The sketch need not be to scale if the dimension lines are correct, but scaled drawings always help and require but little more time to make.

Every item should be indicated on the sketch. The joist, plumbing and soil pipes, stairways, windows, beams, ceiling height, etc., should be shown.

A space is cleared on the shop floor and the center lines of the furnace are made on the floor with a chalk line. As we must have some line on the house to work from we will use the center of the sill or beam for this point. Concrete walls are poor guide lines as they are seldom smooth and may vary as much as 2 inches.

We will assume that the trunk line is designed and the dimension lines, sizes, etc. are those shown in

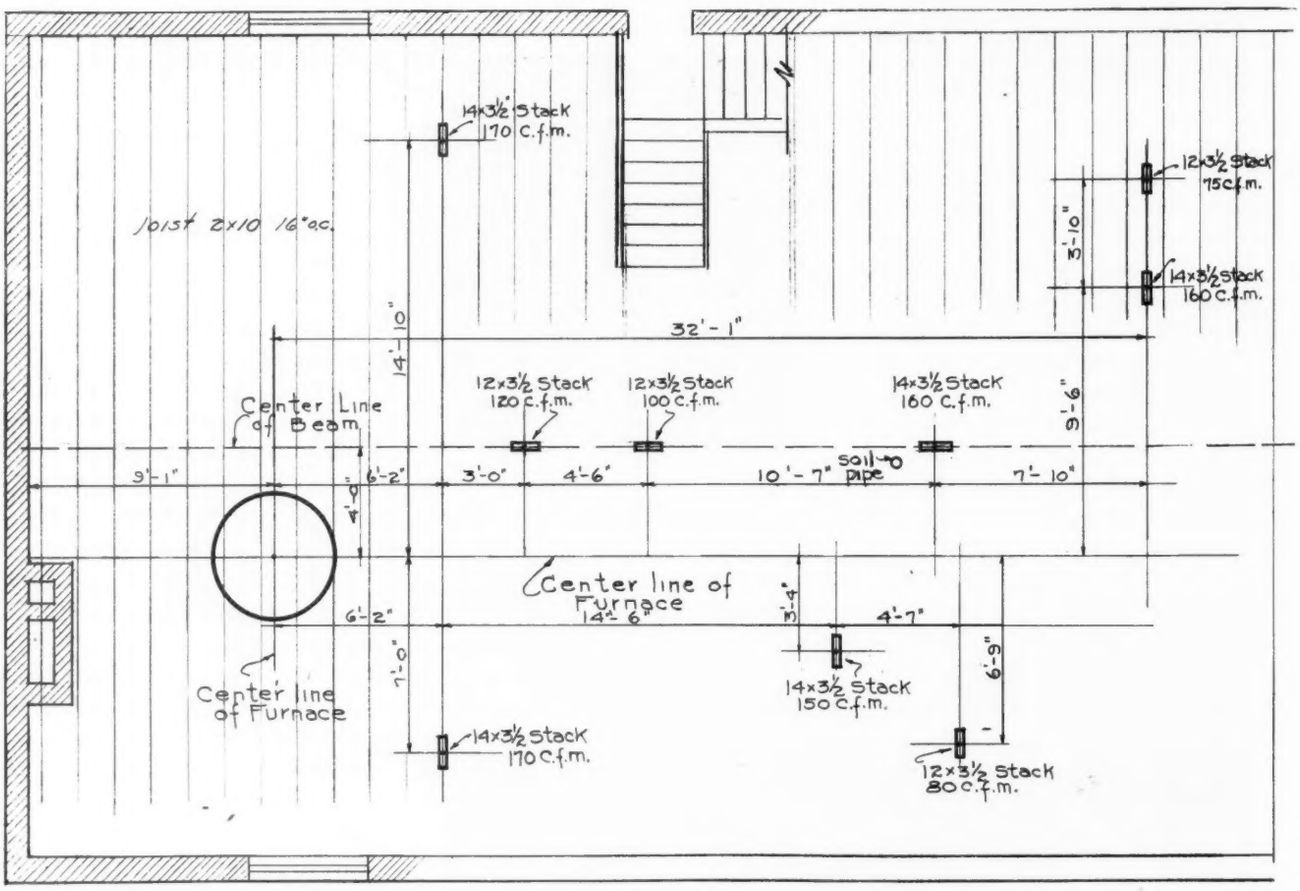


Fig. 1—In designing fan blast systems a good plan is to visit the job and prepare a sketch like this. The registers and risers are spotted and distances between branches and main and main and furnace are all placed on the sketch. Note that joist directions, furnace location, stairway, chimney, windows, etc., are all given and dimensioned.

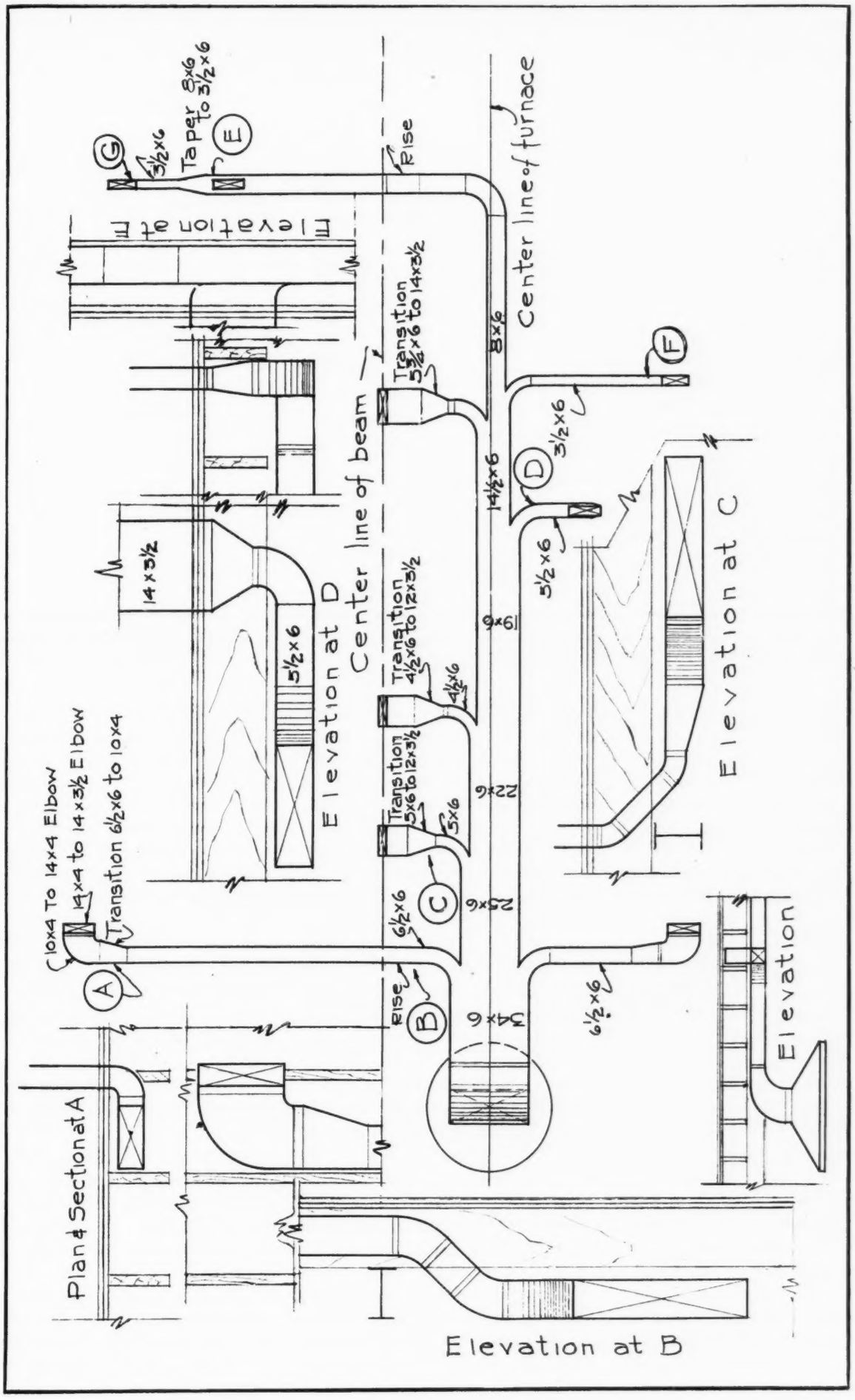


Fig. 2—With the sketch shown in figure 1 a complete duct system can be designed and sized in the shop. This particular system is designed for resistance. All details such as canopy, duct sizes at joints, transitions and branch takeoffs can be shown for pattern cutting, erection specifications and guidance of shop and field crews. When such a design is prepared from a good data sheet, every contingency has been accounted for

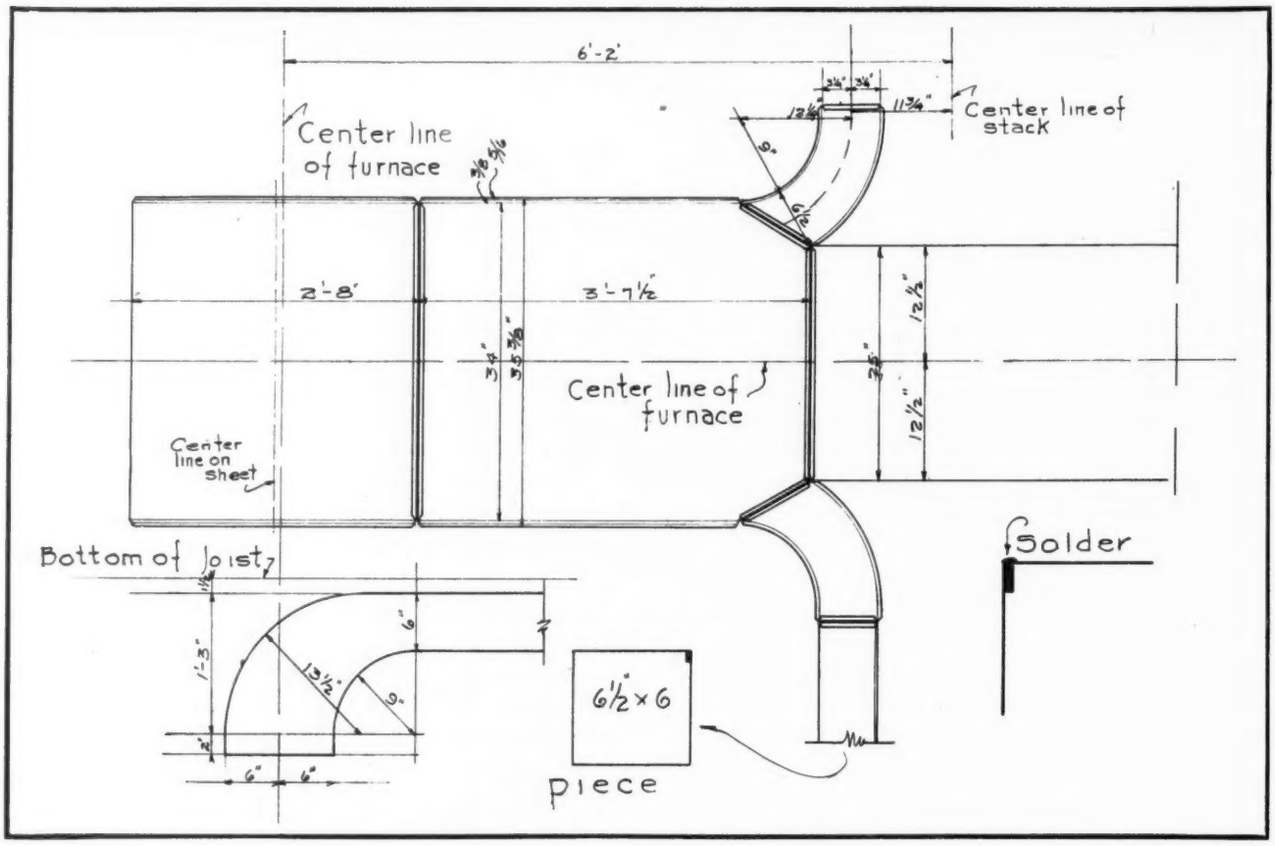


Fig. 3—Ducts need not be costly if common sense is used. The feature of this layout is the soldered joint shown in detail. This might be called a modified Pittsburgh lock which eliminates one fold of metal, also heavy pounding to turn and gives a rigid and permanent joint

Fig. 2. This trunk line is designed to equal friction per lineal foot and no volume dampers will be required. However, they may be installed if desired and placed in the branches. Splitter dampers must not be used.

The basement is only 6'-10" deep and 6'-2" is required for head room, the trunk duct will be run along side of the beam and where the branches run to the far side they will rise and cross the beam in the joist space. The entire system does not contain one pattern difficult to cut, or beyond the ability of the average vocational high school "tin shop" pupil.

Duct Items

All are simple elbows, transition pieces, sweeps, and square ducts. The joints are locked with "S" locks and drive cleats. The major part of the straight ducts will be made in four sections due to the fact that all dimensions between branches are short, but in the case of the longer lengths of 6½ by 6-inch and 8 by 6-inch ducts, these may be made in one piece with a corner lock.

For these comparatively small ducts of light weight gauge, the writer recommends the joint shown in Fig. 3. The ¼" edge is inserted in the double fold and soldered after the pipe or fitting has been squared. The acid is then wiped off with a wet rag and we have a neat, square corner. The lock will not slip and in the event of a mistake the edge may be opened with a hot iron. For small ducts this edge is neater than the "Pittsburgh Lock." Sweating the solder in is unnecessary.

The layout man should check the dimensions from time to time to be sure that he is right. From the plan he may estimate the number and length of the "S" and drive cleats and the apprentice can make them up while the patterns are being cut.

After the various dimension lines are established on the floor and the length of the various sections are calculated, the actual work on the fittings and the pipe sections is done on the bench. Fig. 3 is the two first sections of the trunk duct top starting at the casing top. The second sheet shows the layout of the two first branch takeoffs. Every elbow, joint, and fitting is to be the correct length and no cutting or patching on the job will be necessary.

Duct Design

Fig. 3 shows the method of branch takeoffs for trunk lines designed to equal friction per lineal foot. There are two 6½-inch and one 25-inch or a total of 38 inches of opening from a 34-inch duct. All the branches are made in the same manner.

Where stacks are shop made of galvanized iron the fittings are of course hand made. If factory made stacks are used, the elbows shown at "C," "F," and "G" will be stock fittings.

Where stacks are between joists as over the beam, "S" cleats must be used on the long side and drive

(*Continued on page* 53)

The "Ten Best Prospects" Sales Plan

"Talk Seasonable Items" is the keynote of the October merchandising program. Following are a number of items which are seasonable this month. You should have at least ten prospects for these items or services.

MY BEST PROSPECTS ARE—

In the form below, write the names of just ten prospects you know have money they could spend for your service. This page tells you how to use the list:

Prospect No. 1.....
Should buy.....
Prospect No. 2.....
Should buy.....
Prospect No. 3.....
Should buy.....
Prospect No. 4.....
Should buy.....
Prospect No. 5.....
Should buy.....
Prospect No. 6.....
Should buy.....
Prospect No. 7.....
Should buy.....
Prospect No. 8.....
Should buy.....
Prospect No. 9.....
Should buy.....
Prospect No. 10.....
Should buy.....

A NUMBER of readers have written us that the "Ten Best Prospects" sales plan is mighty fine, but that they are having difficulty sorting out all the sales ideas presented and applying the ideas to their particular field.

That situation is exactly what this plan was devised to overcome. Readers having difficulty coordinating sales idea with prospects have not grasped the full simplicity of this plan.

What you should do is to take the chart and first list the ten individuals or firms which you know need your services or products and who have money. It is useless to list prospects these days knowing they have no money.

How will you know whether they have money? Well, you must use some ingenuity. Have these people contracted for improvements around their home, have they paid their taxes and assessments, have they bought a new car, new furniture, does their place look as though it has been maintained, and so on? Of these, probably the last one is most useful. Any home or place of business which looks run down is pretty sure to look so because no money has been spent. People with even a little money usually don't let their place go to pieces.

When you have these ten names listed go through the August, September and October issues and pick out the products your survey shows these people should need most. Then give yourself some secondary ammunition by listing the second and third most needed item. You might also list the most expensive first and so on.

When the names and items have been selected you are ready for work.

The Products—

RIGHT now most housewives are doing a lot of work in their kitchens. They are canning and preserving, they are beginning to cook more elaborate meals and for company. During these times of rush work in the kitchen every antiquated piece of equipment shows up in its true light. Old sinks, for instance, never look so woe-begone as they do in the midst of a rush of kitchen work or after cleaning up.

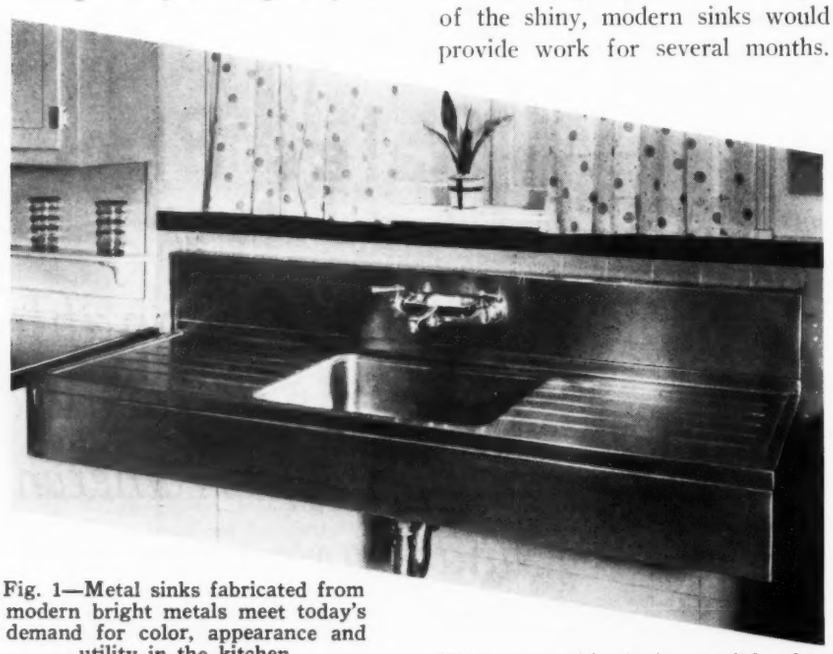


Fig. 1—Metal sinks fabricated from modern bright metals meet today's demand for color, appearance and utility in the kitchen

If sheet metal contractors could talk to the "lady of the house" just after such an experience, the fabrication and sale of stainless steel, Monel, Allegheny and other types of the shiny, modern sinks would provide work for several months. Of course this isn't possible, but contractors can show several photographs of these sinks in modern, brightly painted kitchens and so arouse desire. Fall is an excellent time to talk kitchen equipment. Don't forget that you can make drain boards, work tables, also.

Radiator Cabinets

Most contractors know full well that the radiator cabinet business bloomed like a weed and went to seed almost as quickly in the last four years. The principal reason for the decay of this profitable line of work was cut prices by large volume manufacturers.

Nevertheless, there still remain countless radiator heated homes where at least the living room or dining room radiator should be covered for appearance. In most cases, too, these same radiators are the ones which are unusual in shape, like the one in the picture, or so large that stock items can't be used.

For this type of radiator the sheet metal man can quickly fabricate a cabinet that will equal the most expensive in appearance and possess any coloring or finish.

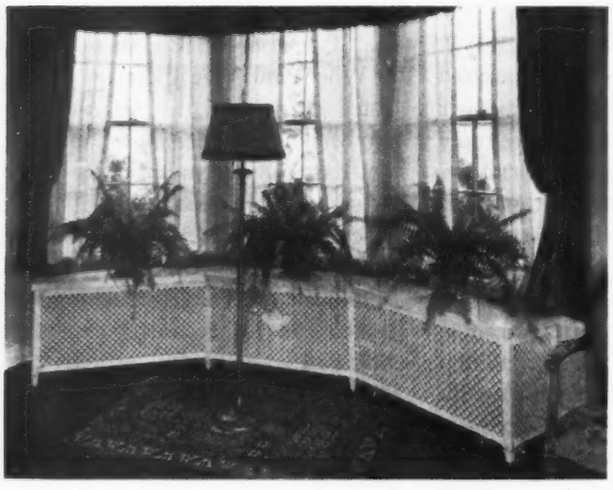
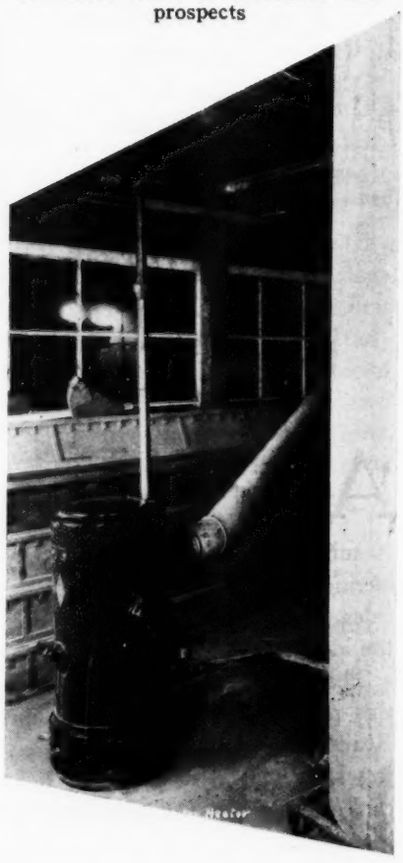


Fig. 2 — Radiator covers can be made a profitable side line if the contractor will concentrate on odd sizes or shapes and build a substantial and attractive unit

Fig. 3—Water heaters are needed in every home—especially in the Spring and Fall. Furnace men can sell these items to customers and prospects



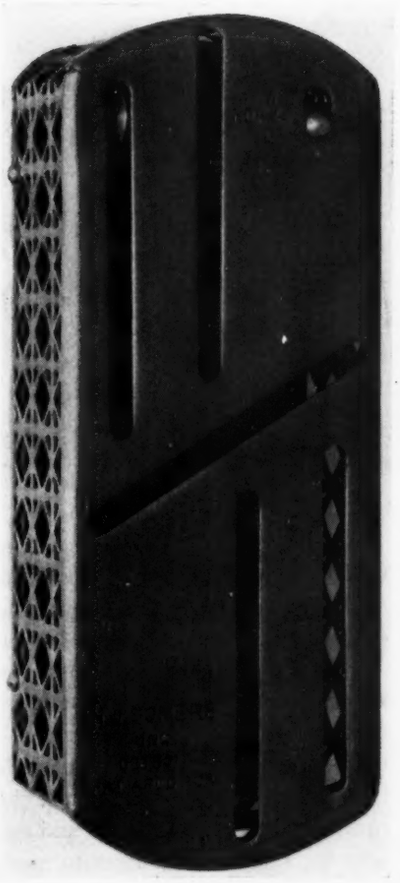


Fig. 4—Controls are always seasonable, but especially in Fall and Spring when control is difficult. This unit governs humidity and has outside weather synchronization

Water Heaters

Most people require large volumes of hot water. In the spring, summer and fall when the heating plant is shut down or only working a few hours, the task of keeping a supply of hot water is a serious problem. Of course most folks would like to have a gas or oil automatic unit, but not everyone can buy or maintain one.

For these people one of the small hard coal heaters is ideal. It can be set in a corner, takes up only a little room, is easy to operate and does a real job of keeping the water hot.

There should be no reason why the furnace dealer shouldn't sell water heaters. Of course if we want to be technical they do go to the plumber usually, but frankly this is only because plumbers claim they have to hook the heater up. Unless there is a strict code regulating installation, water heaters can be made a profitable spring and fall selling item.

Right now is one of the two best times of the year to sell automatic furnace controls, for fall is a hard season on the home owner who wants heat in the morning and evening, but little or no heat during the middle of the day. This is especially true with old furnace installations where draft and check doors may be loose, or the chimney clogged with soot and dirt.

People have read and heard so much of automatic heating that even though they can't afford a completely new automatic plant, they would like to have a device which will maintain a fire despite lack of attention and which will relieve them of continual watchfulness over the furnace.

Controls

For the furnace dealer who has developed a canvassing organization or who does personal selling, these automatic devices provide a sales item which without question have a powerful appeal, and which can be sold for comparatively low cost.

There is on the market practically every type of control in so wide a range of prices that every home owner can be made a prospect. There are controls which maintain constant room temperatures, others which hooked to this thermostat govern every operation of the furnace. There are humidity controls for washer or humidifying systems whether the installation be warm air, steam or hot water.

Typical of the various controls available are the three shown here. There are many others. One of these controls is for humidity. The device is sensitive to the amount of moisture in the air and is set to maintain a certain percentage. More moisture than this shuts off the humidifying device; less moisture turns the washer on.

One of the other illustrations shows another humidity control providing the same kind of control, and illustrating how wide a choice of appearance and control is available. This particular instrument also has a device which is set to correspond with the maximum humidity capacity of the house and the outside weather conditions.

The number and variety of thermostats is practically limitless. Expensive ones and low priced ones are on the market. There are thermostat motors which do not have to be wound; others which are entirely hand wound and set. In all

Fig. 5—Prices on temperature controls have been dropping until now complete control, with one or several instruments, can be sold most home owners. The advantages of automatic supervision make an interesting and saleable talking point

Fig. 6—Humidity controls come in several types. Most instruments are attractive enough for any room and operate through a range which permits close control

of them, constant supervision over room temperatures is featured.

The dealer should also remember that one control does not always end the sale. Houses with one control can frequently use two or more. Also combinations of controls can be sold to give additional supervision over the heating system.

Repair Work

No line of activity followed by the sheet metal contractor has received more attention from manufacturers and inventors than the field of house, store, commercial and factory building repair and replacement work.

The result is that there are now on the market a large number of special items which are intended to make such repair and maintenance work easier, quicker, more substantial and profitable.

The wise contractor will make such items a saleable part of his selling program. For instance, in hanging gutters emphasis can be given the substantial hangers now available. Most home owners can understand how and why such products will mean better service at lower maintenance cost.

Similarly, store, commercial and factory buildings need periodic inspection and usually annual repairs. Such repairs can be sold on the basis of a continuous service or offered free of cost so far as the inspection itself and the estimate is concerned. There is, of course, the danger of being underbid after the estimate is given, but this is an ever present feature of the contracting business.

Manufacturers have put on the market a large number of sheet metal items, such as the flashing receiver pictured in Fig. 7 or one of the many flashing sections, or special items for structural parts of buildings. These items are designed to speed and simplify erection and to eliminate waste metal in cutting and fitting.

These items also possess features of interest to architects and owners. These features can be stressed in the selling talk and established in the prospect's mind as indicative of the contractor's up-to-dateness.

Room Heaters

More than one-half—51 per cent to be exact—of all the families in the country use stoves for heating.

This is a fact that many of us forget or do not know.

Why these millions of homes use stoves despite the apparent advantages of furnaces is unimportant—the big fact is that this is a tremendous market which should not be overlooked in our efforts to find out why we can't sell furnaces to more home owners.

We can, though, sell these millions of families improved types of stoves—oil heaters, gas heaters. 1932 model parlor heaters and so on. There are literally dozens of these improved heaters on the market. Some will heat one room; others will heat several rooms. Practically every one has the advantage of being cleaner, better looking, more comfortable and easier to operate than the old fashioned base-burner.

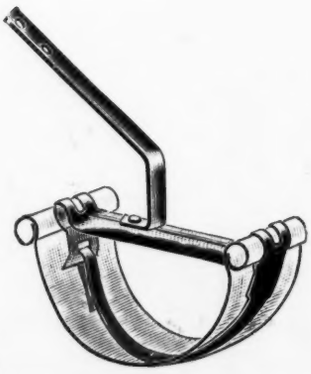


Fig. 8—Devices for making gutter hanging and repair more profitable abound. Most such devices really help to cut costs and increase profits. Such devices can also be made a sales point

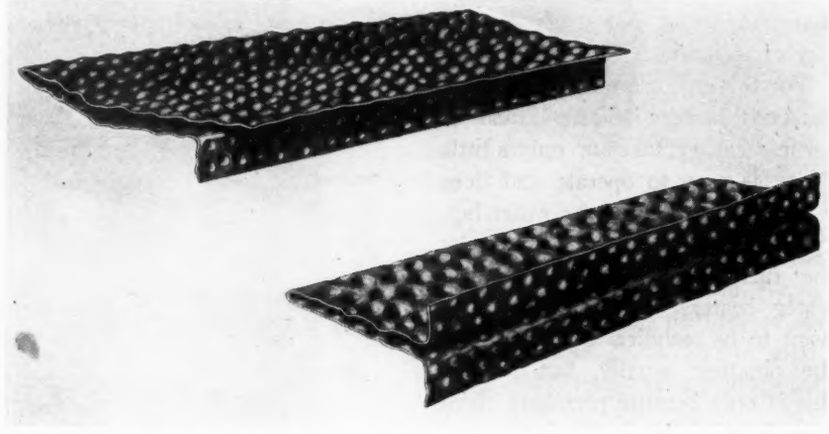


Fig. 7—Many ingenious devices are now on the market to make sheet metal repair work quicker and more profitable. This flashing receiver is one such item. It is applicable to new construction as well as old

Fig. 9—Room heaters are popular, in fact in smaller communities outsell furnaces and boilers. That these heaters can be sold by furnace men is proved by dealers everywhere

Because this market is so tremendous in size every furnace dealer can well afford to look over his field and see where and how he can sell heaters.

Heat Savers

Perhaps most of us are tired of hearing about economy. Nevertheless, economy is a highly important word these days and mention of it gains an audience practically any place. It follows, then, that the dealer who can show a furnace owner how to save fuel costs, at the same time getting increased comfort from his installation, is well along the road to a sale.

One such item is the fuel saver—of which there are a number of varieties—but all designed to save fuel cost by utilizing heat which is ordinarily lost. The device shown on this page takes the heated gases as they pass from the radiator, puts these gases through a secondary radiator around which air is passed by a fan. At the same time this air is washed and humidified by a water spray and then forced into one or more rooms.

Blowers

Most furnace men know the advantages of blowers. We know, too, that there are many types and kinds each designed to produce certain results. The blower pictured has provision for by-passing air when the blower is idle so that the furnace can still work by gravity.

With air conditioning and forced air getting more popular every day a line of rated blowers is an essential sales item for the dealer.

Conversion Burners

With the advent of natural gas around the country interest in gas heat has mounted monthly. Because many house owners cannot or will not tear out their present heater, conversion burners are finding ready sale. Numerous types of burners are now on the market, most of which are readily applicable to existing furnaces. Contractors located on natural gas lines should give serious thought to selecting a conversion burner which meets the particular needs of their prospects.

Humidifiers

Of course humidity is one of the most important things we as a trade will talk about this winter. With all the interest there is in humidity and with the enormous amount of ignor-

Fig. 10—The unit shown to the left takes gases after they have passed through the furnace and extracts heat for the house. In addition the unit humidifies

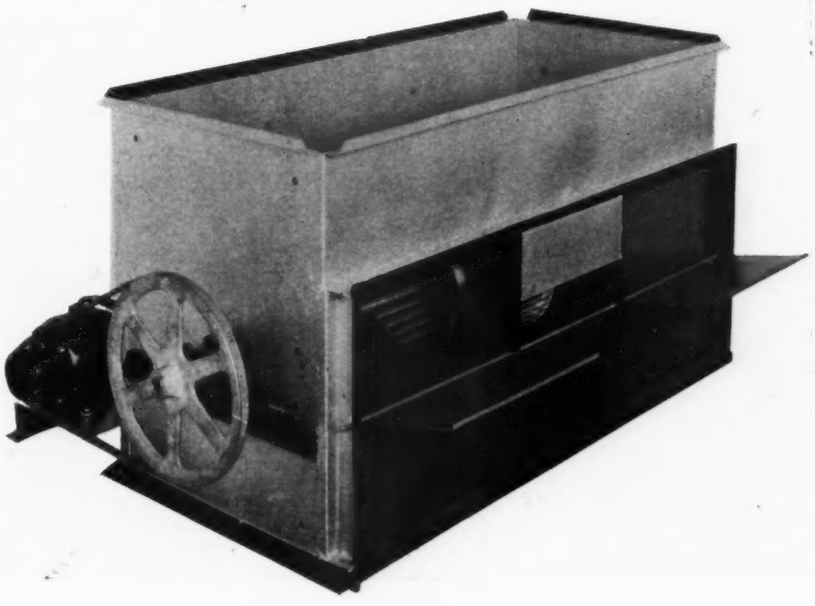


Fig. 11—Blowers are finding ready sale as a part of forced air and air conditioning. Many types are now available but the dealer should select a line which delivers according to rating, is quiet and dependable

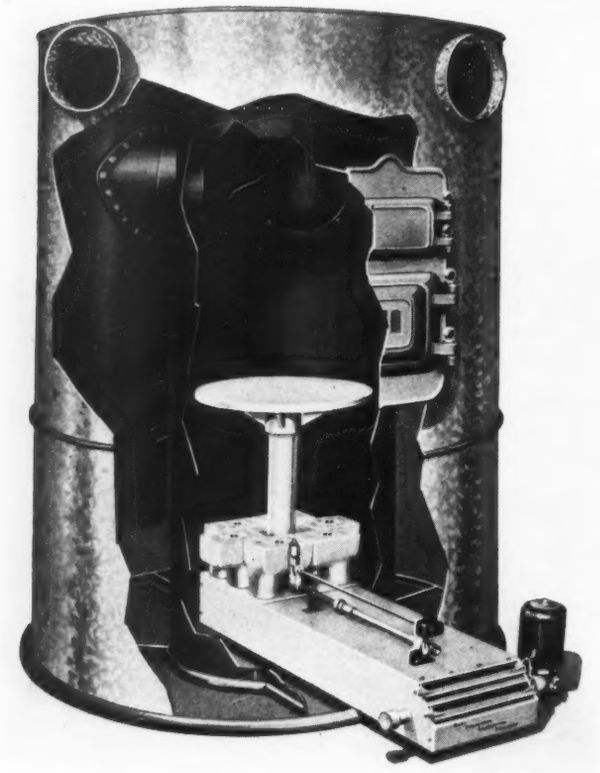


Fig. 12—There are almost as many conversion burners as there are furnaces. Dealers operating in natural gas areas should handle a line of burners for the prospect who wants automatic heat with his old furnace

ance presented by Mr. Average Houseowner we will be foolish if we don't make capital out of the present interest.

There are dozens of humidifiers on the market. And, also, the most interest is centered on the automatic humidifier which is set to maintain a predetermined water level and a predetermined amount of humidity in the house.

"Booster" Fans

When the fan era first came in we did a lot of experimenting with small "booster" fans. We put them in warm air pipes and in cold air pipes. But because we did not know very much about what we wanted to do or could do, too many of these applications proved terrible failures.

Now, however, when we have been through the forced air mill, we can see that there is a definite and advantageous place for the small "booster" fan. As shown in the photograph, it can be put in a cold air return which is sluggish. A fan of this type will also blow air into a room which is hard to heat. With our present knowledge of baffling, dampering, and controlling fan operation we should give thought to the owner who needs and can buy one of these useful units.

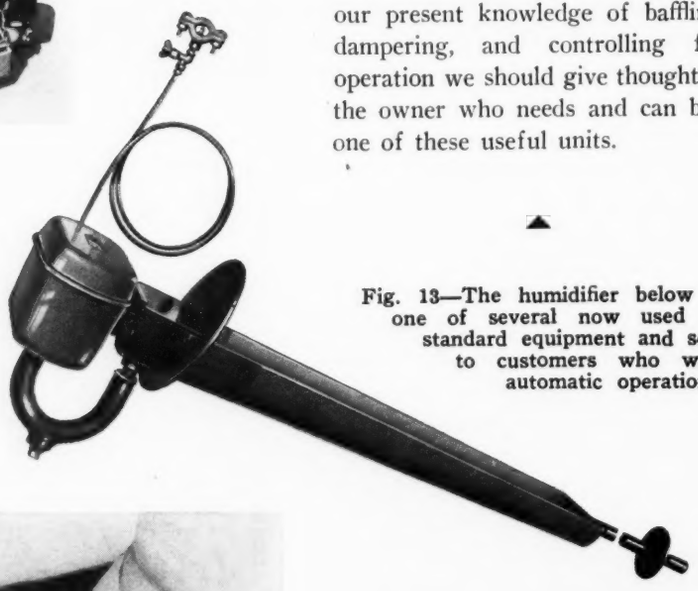
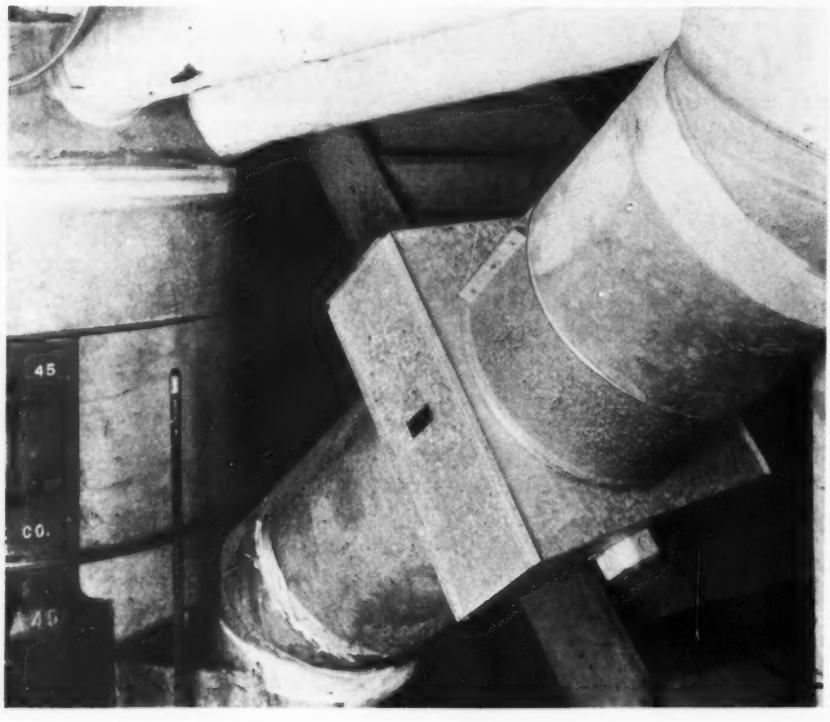


Fig. 13—The humidifier below is one of several now used as standard equipment and sold to customers who want automatic operation



Ventilation

With the increased optimism in business, shops and offices will again be in a mood to spend money for improvements—especially the kind of improvements which bring increased employee production, comfort and health.

Shop and office ventilation is not difficult to contact. Neither is the application of small ventilation fans

Fig. 14—We know that small "booster" fans can be used in many installations to rectify sluggish circulation on either the cold or warm side. Have a line of small fans for such remodeling jobs

so technical a matter that only an engineer should undertake it.

The contractor who has the time or sales force to call on shops, stores and offices should be able to build a profitable volume in this type of work at the expenditure of only a small amount of time and money.

Fig. 15—Above is shown an office with ventilating fans which keep the air in circulation and accomplish some cooling. Contractors can profitably stress such installations to office prospects

Fig. 16—Marquises are not new, but the idea of selling standardized units to chain stores is new. Such units can be patterned, fabricated and erected with minimum waste and at good profit.

Marquise

Sheet metal men have been building marquises since the industry graduated from swaddling clothes. Most of these canopies were specially designed, specially sold and specially fabricated.

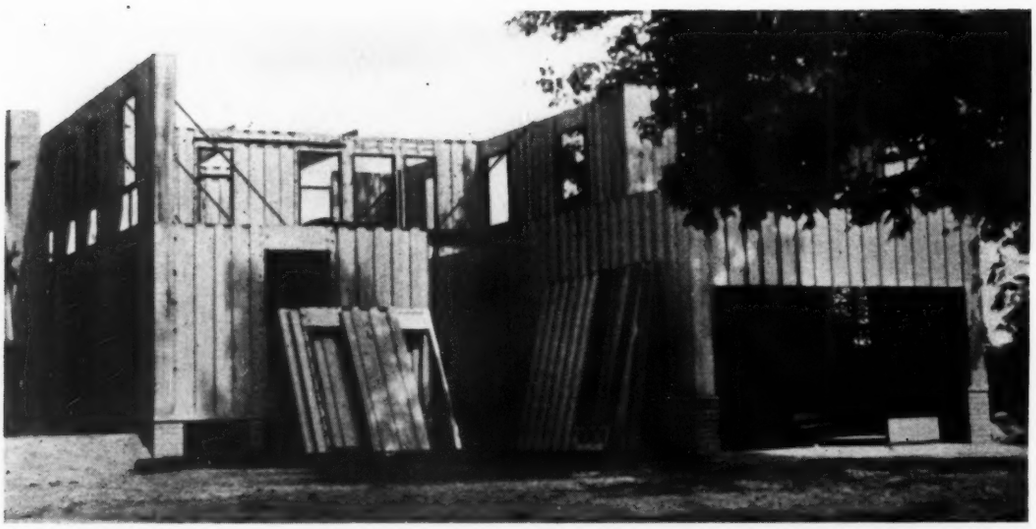
Some contractors, wiser than the rest, conceived the idea of selling marquises on a wholesale basis. The prospects they selected were the chain stores. Why? Because these chain stores as a general rule buy or rent buildings pretty much alike and of a size. Why, then, not sell standardized marquises. They did.

Roof Repairs

Many contractors sell a roof and gutter inspection service. "We will inspect and recommend repairs for so much a year" is their slogan. This kind of business knows practically no limitations.

Fig. 17—Don't overlook commercial and public building gutter and roof repairs this fall. Now is the time such maintenance should be made to prevent later costly repairs

Manufacturers of Items Shown Are on Page 53



The Fabricated Steel House— Our Answer to Low Cost Housing

A FRAMELESS steel house which may ultimately point the way to cheaper and better homes is now nearing completion in Solon, Ohio, a Cleveland suburb. It is being constructed by The Insulated Steel Company, of Cleveland, in cooperation with the American Rolling Mill Company of Middletown, Ohio, and Reister and Thesmacher, Cleveland sheet metal contractors.

It is believed that the new frameless method of construction is a marked advance toward the factory production of low-cost homes. As the weight of the structure is carried by the walls, the erection of the conventional structural frame is unnecessary.

A large part of the frameless steel house was shop produced. There is no waste, nor field cutting nor fitting. The walls are made of 20 gage steel sheets. Box-like corrugations, or channels, 2 inches deep by 6 inches wide, were pressed lengthwise in the sheets to give them strength and rigidity. After forming, these wall sheets were of four different standard widths. This provided a certain amount of flexibility in width adjustment when assembling walls. Further adjustment may be secured by telescoping the channels, in which case a hollow column is formed in the wall, providing extra strength.

Walls and Floors

The walls were assembled in large sections, room wide and story high, with window or door frames in place. The welding of the various pieces in a section was quickly done. The welds are approximately ⅜-inch long, spaced about 12 inches apart, and required on the average five seconds time per weld. The completed wall weighs slightly more than two pounds per square foot. They were hauled to the job like stage scenery.

The floors are of 18-gage steel. The individual floor sheets were formed longitudinally in the shape of a long "Z." These were lapped one over the other and welded together, forming a series of metal boxes which, though light in weight, possess great strength.

In erecting the house the lower floor was completed first. Then the first story walls were set in place and welded to a foundation cap and the floor. The second floor was next completed, followed by the second story walls, the roof, and the parapet walls. As it was erected a floor at a time, no scaffolding nor extension ladders were necessary. The union of the steel floors and walls, which is accomplished by arc welding, gives the structure exceptional rigidity and strength. Only one welding outfit and two workmen were employed on the erection work. Seventeen tons of steel were required to form the "chassis."

The exterior of the house is heavily insulated against heat or cold, and is covered with porcelain enameled shingles. It will never require painting, and a bath with the garden hose will quickly restore its original luster. Other exteriors such as stucco or brick may be applied.

The interior of the wall will be finished with gypsum lath, on which two coats of plaster will be applied. The completed wall is less than 4 inches in thickness.

The ceiling will be finished with an acoustical tile cemented to the lower plane of the steel floor above which serves as a plaster base for the room below.

Laminated hardwood floors will be laid in the living quarters, while linoleum will be used in the kitchen

and bath. These are fastened to the floor with an asphaltic mastic which serves as a sound deadener, a leveler, and an adhesive.

A four-ply asphaltic roof will be applied over an insulating slab 2 inches in thickness. As the roof will also be the porch, thin pieces of slate will be imbedded in the asphalt to provide a walking surface.

Another interesting feature of this unusual house is the absence of screen doors. The glass in the exterior doors is operated with a crank like an automobile window. There is a roll screen in the top rail which is fastened to the upper edge of the glass. As the glass is lowered to ventilate the interior, the screen rolls down and prevents the entrance of insects.

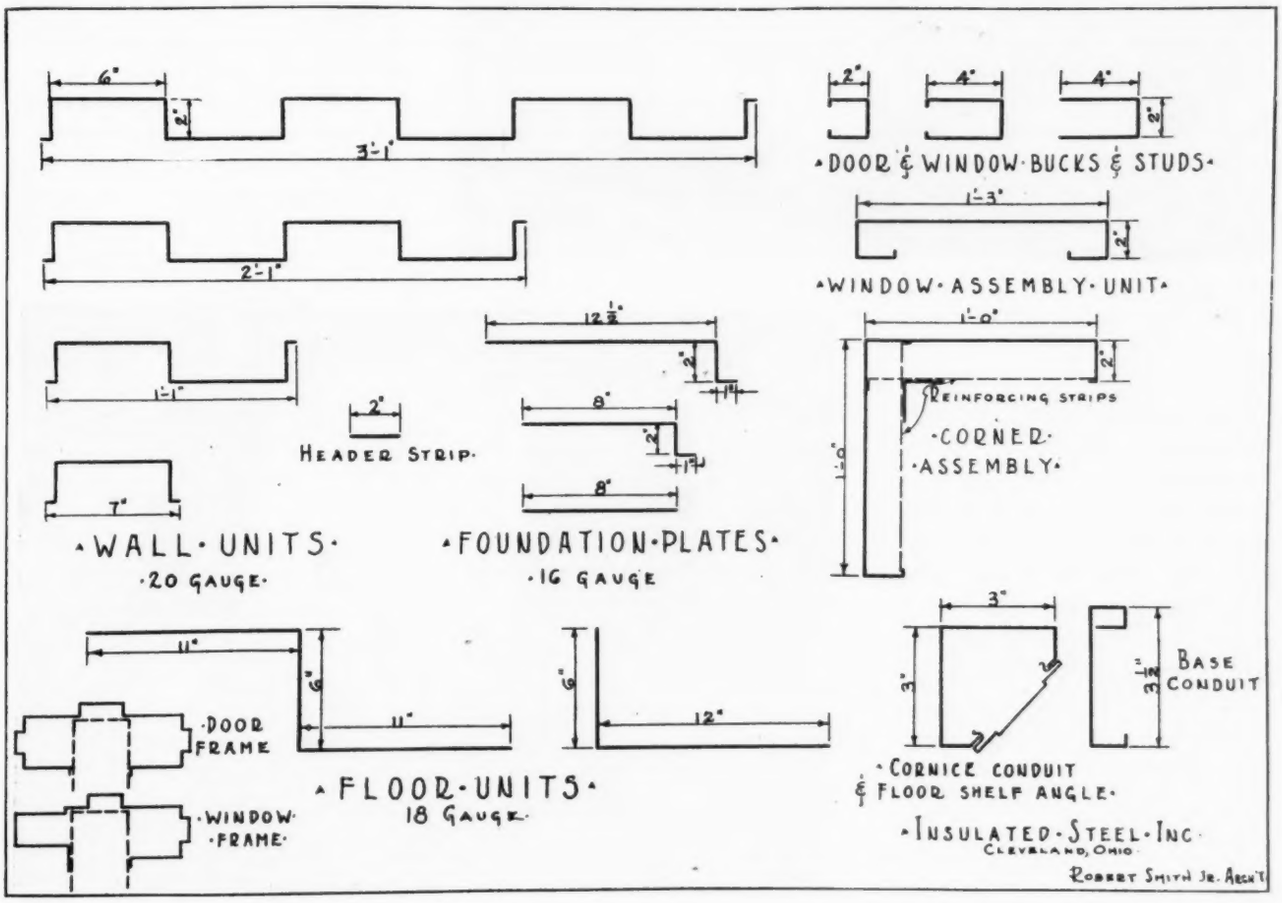
On the roof a small solarium is located, and the remainder of the roof area furnishes a safe playground for small children, away from the dangers of automobile traffic. In the winter, the roof can be flooded and used as a skating rink.

Architect's perspective of the fabricated steel house. This type of construction can be adopted to all styles of architecture

The house is highly fire resistant. It contains no combustible material except the wood floors and furnishings. Moreover, it is rat and vermin proof, there being no place for rodents or insects to harbor.

As steel is not subject to shrinkage, the usual cracking of plaster is eliminated.

This demonstration of the adaptability of sheet metal to low cost home construction is not aimed at producing a standardized house, but to perfect a new method of construction which can be used to reproduce almost any type of archi-



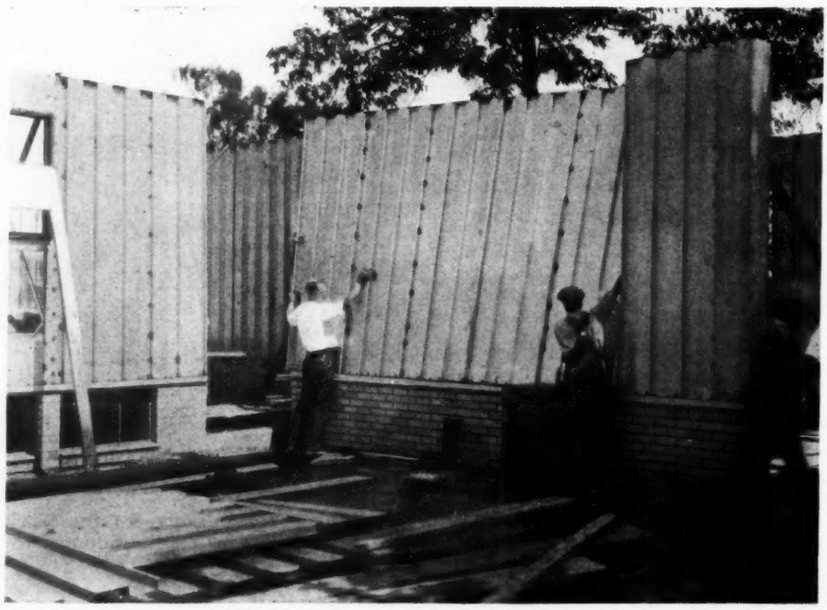
Details of the various fabricated sections used for walls, floors and supporting members. No structural frame is required. Note the similarity between floor and wall sections—one way to reduce shop cost

tecture. In the future the home owner may buy his house somewhat in the same manner as he selects his car today. At present, the house is too well entrenched in sentiment and tradition to attempt anything so revolutionary, and America would probably resent a movement to standardize houses. This particular type of fabrication is so flexible it can be utilized to factory-produce the individual house. The architect can make his drawings according to the owner's desires, deliver his plans to the house factory, and supervise the work, as he does at present, with far less waste and inconvenience.

Nor does the house under construction attempt to solve an aesthetic problem. What represents architectural beauty and splendid arrangement in the mind of one person may be repulsive to another. Beauty is judged by individualistic standards. The flat roof was selected because of its economy. It may be replaced with a gable roof at an additional cost.

The first edition of the frameless steel house contains seven rooms, two baths, and a double garage. There is a large recreation room, a boiler room and laundry, and other storage rooms in the basement. Produced without the aid of any specially designed machinery or handling equipment, and erected by workmen unskilled in the new technique, its cost is comparable to frame construction. Through the experience gained in its erection, many new ideas have been developed which will still further reduce housing costs and improve and simplify home construction. It will soon be possible to complete a home of average in a few days' time.

The new frameless steel method of construction was developed by Mills G. Clark, former president of the Cleveland Real Estate Board.



Wall sections were spot welded into large areas. These sections were then erected and held temporarily in place until wall units were joined. Walls are insulated and covered on the outside with enameled shingles

The welder is spotting floor sections on the foundation. Welds are several inches apart

Assembling and welding a wall section having window openings. Shop assembly of large sections means reduced cost and erection speed

"Remodel with Sheet Metal"!

We carry on with the campaign commenced in our last issue. Last month the selling copy was on metal roofs. In the article which follows we go after metal ceiling business

WE HAVE tried to be careful in this series of merchandising articles to keep within practical bounds. As in the case of our "Ten Best Prospects" selling plan, our desire is to go as far as possible in the direction of keeping down the cost of any merchandising effort. We are not unmindful of current conditions; yet neither can we overlook the fact that two things are true: There are always people who have money to spend and who are doing some buying, and that the man who wants to see his volume of business mount with the new rise in total business volume can't expect that result if he is lying back on his oars completely now.

Every contractor knows his own situation. If he has the courage to spend what money he can put into merchandising, and spend it wisely, he will not find it a loss to him. And if he finds that he can spare no money for merchandising or advertising efforts, then he still has his own time which should be, and under present conditions must be, invested in the task of securing some business. In this latter case, the copy which we have suggested for various sales letters or newspaper advertisements is worthy of study. It contains carefully considered sales arguments, which can be effectively incorporated into his conversation with customers or prospects.

Our next step in this "Remodel with Sheet Metal!" campaign takes up the subject of steel ceilings, under which we think, also, of steel walls. Before getting into the copy angle let's be sure we are clear as to just what we have to meet in this job of selling steel ceilings. To most people, the idea of the metal ceiling suggests those great, deeply-embossed squares which used to adorn the ceilings of stores, restaurants, etc. But, as was pointed out in our 1931 Annual Issue, the opening years of the present century saw a demand for simplification in architecture and decorations. The over-elaborate designs of the Nineteenth Century went into the discard.

That is true, also, of the steel ceiling pattern. Manufacturers now offer ceiling metal in small, shallow patterns, often far less elaborate and much nearer to modern decorative ideas than popular wall paper designs. This, then, is the first thing to bear in mind in talking to a prospect, or in addressing a list of prospects through the mails, or in classified advertising or display space. Make sure that your customer understands that today's patterns for metal ceilings are as modern as today's automobile designs. These patterns have been designed to meet present-day tastes. And, of course, they retain all of the old advantages of lasting quality, fire-resistance,

My dear Madam:

Frequently there are two patterns on a ceiling, -- neither of which is pleasing to the fastidious housewife. One may be a pattern of cracks in the plaster, the other a pattern made by the dust as it settles on the plaster along the lines of the lathing. In either case, an otherwise charming room suffers in appearance. These patterns cannot be altogether guarded against--and when they appear, a cleaning or re-decorating job is in order, expensive in time or in both time and material.

So much for appearances. There are other things to be considered. Cracked plaster holds a threat of danger to the family. A great piece of plaster, falling from ceiling height, can inflect severe injuries, not to mention the damage to furniture and the discouraging job of cleaning up such a mess.

On both of these counts--charming appearances, and safety--the housewife may eliminate her difficulties by the application of a steel ceiling. Put on directly over the plaster, such a ceiling may be installed in a brief period of a few hours. And in modern steel ceiling patterns the housewife will have a choice of design that is smart, the individual design being small. Or it may be had in a continuous pattern of the so-called "Spanish plaster" type.

Once installed, the ceiling will serve the life of the home. It is obviously safe. It may be painted to blend in with any color scheme --and may be cleaned as easily as a floor surface or a table-top. Distinctive designs may be had not only for such rooms of utility as the kitchen and the bathroom--but for bed rooms, living rooms, etc.

One more point is in favor of the steel ceiling--and a highly important one. It will resist about twice the heat of plaster, for about six times the length of time a plaster ceiling will. Such a reduction in fire hazard in the home is something to be striven for.

You will want to see the charming, small patterns in which steel ceilings may be had, of course. If you will telephone me at (here your phone number), I'll be glad to arrange an appointment at a time convenient to you.

Very truly yours,

ENTERPRISE SHEET METAL COMPANY

Letter for home owners. Below: Three small ads for newspapers, programs, etc.

cleanliness, low maintenance, and so on.

Because, in the modern world of selling, appearances count for so much, we regard this point concerning the small pattern as one of very great importance. Proof that appearance is a strong selling factor is easily seen in the efforts of the automobile manufacturers to turn out striking designs. You don't improve the motor under the hood any, even if you do give the hood long, sweeping lines so that it looks as if a battleship were bearing down on you. But the motor under the hood is given much less thought by buyers than the hood itself. It's a fact of human nature with which it is unwise to quarrel. So, appearances first, in selling the steel ceiling, and then the fire-resisting qualities and the other advantages may follow after.

The market for steel ceilings is not, of course, limited to homes—it will, in fact, be found to have large possibilities in stores, shops, offices, etc. There are three major arguments to be used when appealing to the owner of a store or other place of business used generally by the public. First, we have appearance. Here again the small modern patterns—and the generally improved patterns—as well as the greater cleanliness. Then we have the factor of safety. In one of our issues we published a reproduction of a news story in which a $25,000 loss was claimed to have been caused by the falling of a plastered ceiling in a restaurant. A number of the patrons were hurt and had to be taken to a hospital for treatment, while there was damage, of course, to the furniture and fixtures. It is true, perhaps, that we do not hear of many such accidents—but it would take only one to put a small business man out of business. The third argument with the business man is the low cost of maintenance. He can paint the steel patterns in any desired color, they may be washed and kept sparkling. There will be no cracks, and the accumulation of dust, etc., may be easily removed periodically.

A fourth argument will be of great strength where a valuable stock of merchandise is kept. This will be particularly true if the merchandise is in a building with other

Just about this size—

are the new patterns for steel ceilings—suitable not only for kitchens and bathrooms, but living rooms, bed rooms, etc. Phone for particulars.

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

No more ceiling streaks

if you install modern steel ceilings. Small, dainty patterns, easily cleaned, charming in design. For every room in the house. Patterns as small as three inches square—or continuous.

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

Look at the Ceiling!

Is it cracked . . . streaked? You can cover it quickly and economically with a steel ceiling that will last as long as the house. Small, charming patterns, or a continuous one in plaster effect. Easily cleaned, will not crack (or fall down), can be painted any color.

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

Letter for real estate men. Below: Three more small ads for newspapers, programs, etc.

occupants, over whom the store owner has no control. Tests have shown that the steel ceiling will resist twice the amount of heat for almost six times the period that a plaster ceiling will resist it. Thus, a fire may be started in some other portion of the building that is rented to various occupants. Ceilings and side walls of steel will, by the results of this test, serve to retard the progress of the fire for a period sufficient to give the fire-fighting forces time to get it under control.

Advertising Copy for Use

In this article we give several sales letters for use in promoting steel ceiling sales. In addition to this we have prepared a number of small newspaper advertisements, of a size suitable also for use in classified directories or sections, programs, etc. Small space, properly used, has been proven to have great drawing power. It costs but little and enables the contractor who does not have a great deal of money to spend on advertising to keep his name consistently before his public.

In preparing this advertising copy we have made use of the accepted sales arguments as to fire-resisting qualities, long life, ease of cleaning, style, safety. The contractor who is conducting an advertising campaign can not do better than to study these sales arguments and expand them for use in talking to his prospects.

A further method by which advertising copy is made more effective is to use window displays which tie in directly with the copy. For example, in order to visualize the idea that the smaller pattern is now available, a single pattern square might be mounted on heavy cardboard. Some method would then be devised to indicate the measurements. Suppose the square is three inches each way. Two rulers mounted along the horizontal and the vertical edges would have heavy red lines run out from the 3 inch markings on the rulers, onto the cardboard, with the measurement each way indicated heavily. A brief sales message on the cardboard would complete an easily-understood demonstration of the fact that the newer patterns in steel ceilings may be had in these smaller sizes. A neat arrangement of pattern selections would complete the picture. Note how the same idea has been used in one of the small advertisements.

Steel for ceilings!

Steel . . . durable, safe, fire-resisting, easily cleaned, in small, charming patterns. If you're doing over a room—any room—let us show you the economical, lasting qualities of steel for the ceiling.

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

The New Ceiling Patterns

. . . in steel . . . are designed to fit the most charming room of the house. Small, a wide selection (also continuous patterns—such as the "Spanish plaster" effect), they offer great opportunity if you are going to "do over" a room.

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

Plaster cracked? Watch it!

If it comes down, there'll be a cloud of dust—and there may be serious injuries. Prevent the possibility by installing a steel ceiling. Small, charming patterns, easily cleaned, safe, fire-resisting!

Phone 0000
ENTERPRISE SHEET METAL COMPANY
111 Main St.

My dear Sir:

Under present conditions, no detail can be overlooked in studying the problems of renting or selling a residence. A touch of distinction here and there gives the real estate operator a positive talking point; while points of criticism will be taken note of quickly by the average person interested in trying to get the rental or purchase price down to his liking.

We may live in our own houses with cracked ceilings without being greatly conscious of them. But the man or woman looking at a home or apartment will see cracked ceilings and they will exert their influence in the making of the final decision.

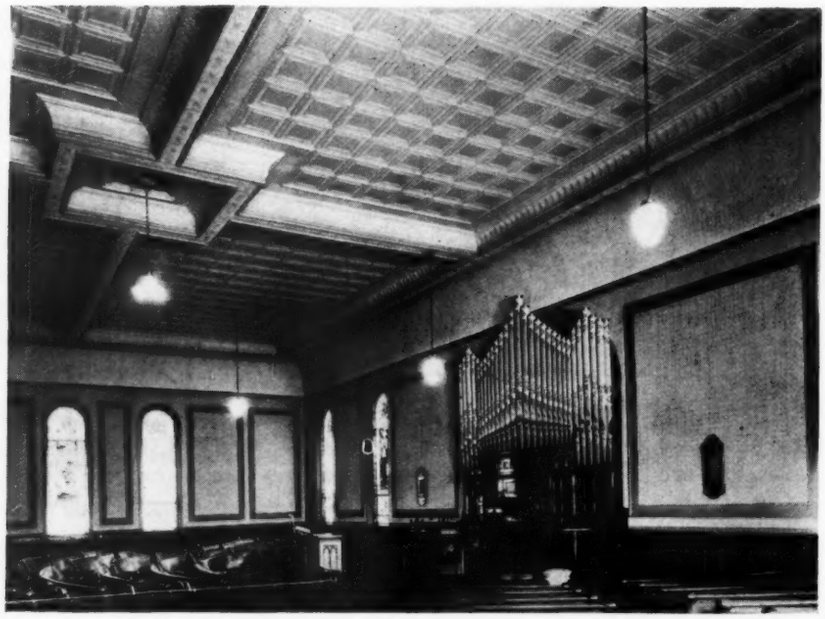
The house which has a modern steel ceiling has two very definite advantages to the eye of the prospective renter or buyer--first, appearance. Don't think of steel ceilings in terms of the old-fashioned, foot-square patterns. Patterns are now made in small sizes, as well as in continuous designs, as in the case of the "Spanish plaster" finish. The second advantage is in the absence of unsightly cracks.

Two other advantages may be mentioned. Steel ceilings require very little in the way of maintenance. It is cleaned by merely washing it. The other additional advantage is in its qualities as a fire-resistant. Tests have shown that such a ceiling (and the same is true when steel is used for walls) will resist twice as much heat approximately six times longer than will a plaster ceiling.

I'd like very much to talk the matter over with you in connection with any of your present properties. At every point--economy in maintenance, safety, appearances--you will find it of interest, particularly under present conditions. Just phone me at (your telephone number here) and I will be glad to arrange an appointment at your convenience.

Very truly yours,

ENTERPRISE SHEET METAL COMPANY



Frank Limbach Sells Ceilings To Architects, Contractors, Home Owners

IN PITTSBURGH, Pennsylvania, the story of metal ceilings, is being impressed on architects, contractors and home, commercial and industrial building owners by several metal ceiling specialists. Some of these firms have been specializing in ceiling work since before 1900.

A leader in this class of metal work is Frank Limbach, who operates under his own name and who has established an excellent reputation for the success he has made in selling ceilings to such persons (like architects) who ordinarily are considered impossible to interest, let alone sell.

While direct mail of several types is used in the Limbach sales program, the principal selling effort is concentrated on personal contact with individuals who buy or who recommend or control buying.

Most of the direct mail used consists of broadsides and circulars supplied by metal ceiling manufacturers for their distributors. For example, one of the folders now being used is the one shown in two illustrations. The outside fold carries the scare title "Disaster With Plaster." Inside the story of the many available patterns and designs of metal is told by pictures and text.

Letters are also used, usually written to appeal directly to one class of receiver as, for instance, store building owners.

Most reliance, however, is placed upon personal solicitation, made either on direct leads or on general canvassing. According to the firm the following are the sources of leads and sales arranged in accordance with the number and amount of return secured.

1. Covering prospects for store,

"WHERE TO BUY IT"

Ceilings.

Acoustic Celotex Co 2420 W Liberty av..LO cust-1911
Empire Metal Ceiling Co
221 Beltzhoover..EV erglade-6410
Fellers N M 229 1st av.....CO urt-4233
Keighley Mfg Co 15 3rd av.....AT lantic-2548
Keighley S 15 3rd av.....AT lantic-2548
Keystone Metal Ceiling Co
1325 Methyl..LO cust-1590

LIMBACH FRANK

BERLOY PERFECT JOINT
CEILINGS
Homes—Stores—Theatres

1722 East Ohio St.....CE dar 5500

Pgh Metal Ceiling Co 229 1st av....CO urt-4233

Ceilings—Metal

EMPIRE METAL CEILING CO
Agents for
Wheeling Corrugating Co.
Metal Ceilings
Expert Erectors of Steel Ceilings
and Side Walls - Hardware
Res. CA rick 5415-Y
221 Beltzhoover Ave.....EV erglade-6410

KEIGHLEY'S CEILINGS
Established 1884
CEILINGS OF BEAUTY AND PERMANENCE
Best Work — Best Materials
Reasonable Prices
15 Third Ave.....AT lantic-2568

The nearest plumber is listed in the Classified Directory.

At the top of the page is a typical Limbach church application. Such rooms will take large patterns, heavy moldings and specials. The walls are also metal.

To the left is a section of the Pittsburgh classified telephone directory which Mr. Limbach reports gets excellent results as an advertising medium. This contractor buys large listing space.

churches, clubs, lodges, commercial buildings of all types through building reports, building exchange or construction digest papers and reports.

2. Constant contact with general contractors and architects throughout the territory.

3. Circularizing home owners, especially of old homes, and owners of all types of buildings with direct mail, circulars, letters, etc.

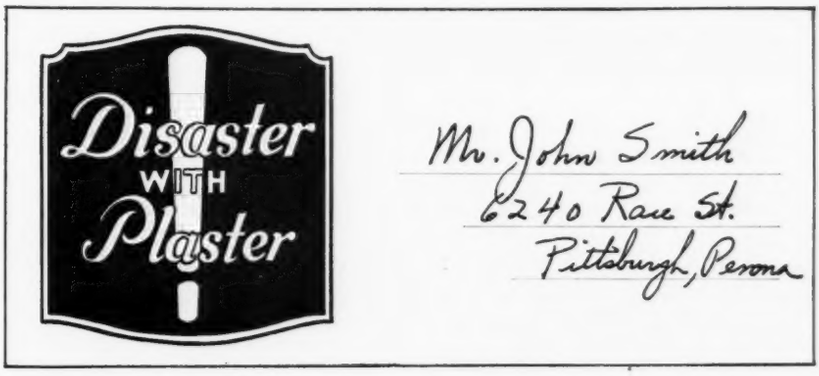
4. Classified telephone advertising for home, store and theater or church work.

Salesmen Followup

Constant contact with architects, builders and contractors is maintained both by following up leads through the exchanges mentioned or by periodic calls even though no direct business is in prospect. This "social" sales promotion has shown excellent results for the firm's efforts. It has also brought out the interesting point that "social" contacts oftentimes get contracts despite lower bids or other competition.

The various reports of new and remodeling work received are carefully followed up. Usually, the firm states these reports are received early enough to permit a representative calling on the buyer, architect or contractor before actual bids have been accepted.

An interesting practice followed by the firm is the periodic canvassing of both business and residential districts by salesmen whose job it is to walk into and out of stores, shops, buildings and call on home owners. The purpose is to look over all classes of buildings and see where metal ceilings might be profitably purchased. The firm reports that some surprisingly large and satisfactory installations have been secured through this canvassing without the help of any preliminary information.



Scare literature is used with good results. This three-fold piece, as the slogan indicates, sounds the warning of disaster from falling plaster

The Pittsburgh Market

The contractors selling metal ceilings in Pittsburgh have done a good job of educating architects and contractors. Practically every architect and contractor has been placed on the mailing list to receive all the direct mail matter published by the ceiling manufacturers.

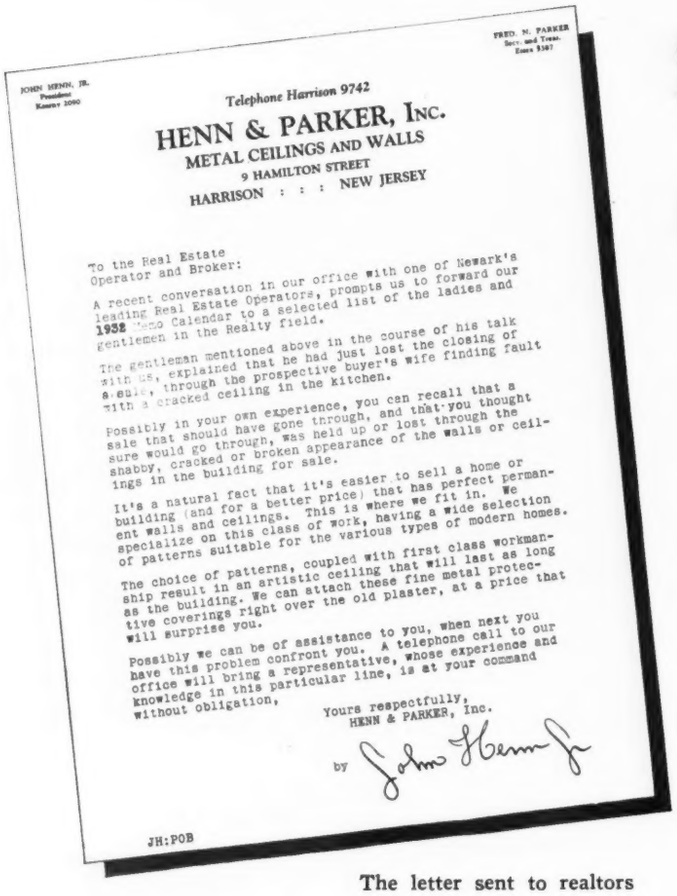
Fireproof construction has dug rather deeply into metal ceiling sales to owners and architects of all types of commercial buildings. Because of decreased sales to this field the firm has shifted a part of its sales program to efforts in the residential field — particularly the owners of old houses.

Among the many types of buildings in which the firm has installed metal ceilings are stores and shops of all types, churches, schools, halls, houses, and public buildings. Changing styles in public demand has been met by advocating the newer and smaller patterns of metal, although the firm reports a very definite field for the large pattern, heavy design ceiling.

Safety and Beauty with Metal
More than one-half of those injured in the gas explosion of November 14, 1927, were hurt by falling plaster.
Plaster is unsafe. The constant vibration of a building due to our present heavy traffic puts a strain on your plaster ceiling that it cannot long withstand.
When you consider that plaster weighs from 8 to 10 pounds per square foot you can appreciate why it frequently causes serious injury. To plaster your ceiling is to invite trouble.
Metal ceilings in the heart of the explosion district remained undamaged.
With a metal ceiling, which is easily installed over an old plaster ceiling, you have a positive assurance of safety and permanence with the added advantage of beauty and low maintenance cost.
Metal ceilings are more attractive and durable than any other type of ceiling finish. They are very moderate in cost and give the greatest possible value to the home owner.
Frank Limbach
1722 East Ohio Street
Phone, Cedar 5600 N. S. Pittsburgh, Pa.

Manufacturers' direct mail literature is used as far as possible by Mr. Limbach. This is one page of a mailing piece suitable for owners of large houses. Do you use the appeals set forth here?

2,000 Metal Ceiling Sales in 12 Months



JOHN HENN, JR.
President
Kearny 2090

FRED. N. PARKER
Secy. and Treas.
Essex 9387

Telephone Harrison 9742

HENN & PARKER, Inc.
METAL CEILINGS AND WALLS
9 HAMILTON STREET
HARRISON : : : NEW JERSEY

To the Real Estate
Operator and Broker:

A recent conversation in our office with one of Newark's leading Real Estate Operators, prompts us to forward our 1932 "Who" Calendar to a selected list of the ladies and gentlemen in the Realty field.

The gentleman mentioned above in the course of his talk with us, explained that he had just lost the closing of a sale, through the prospective buyer's wife finding fault with a cracked ceiling in the kitchen.

Possibly in your own experience, you can recall that a sale that should have gone through, and that you thought sure would go through, was held up or lost through the shabby, cracked or broken appearance of the walls or ceilings in the building for sale.

It's a natural fact that it's easier to sell a home or building (and for a better price) that has perfect permanent walls and ceilings. This is where we fit in. We specialize on this class of work, having a wide selection of patterns suitable for the various types of modern homes.

The choice of patterns, coupled with first class workmanship result in an artistic ceiling that will last as long as the building. We can attach these fine metal protective coverings right over the old plaster, at a price that will surprise you.

Possibly we can be of assistance to you, when next you have this problem confront you. A telephone call to our office will bring a representative, whose experience and knowledge in this particular line, is at your command without obligation,

Yours respectfully,
HENN & PARKER, Inc.

by John Henn Jr.

JH:POB

The letter sent to realtors

"WE have erected metal ceilings in more than 2,000 rooms in homes, including kitchens, dining rooms, bedrooms and living rooms, in the past year, in addition to our repair and remodeling work in commercial establishments, particularly old buildings."

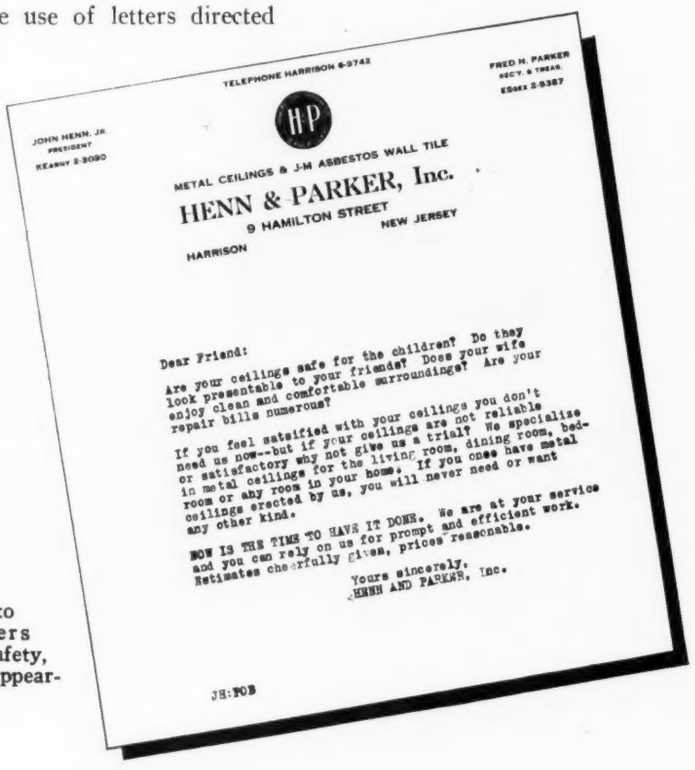
This quotation, in a sentence, outlines the success the firm of Henn and Parker of Harrison, New Jersey, has had with the idea of selling metal ceilings.

The basis upon which this volume of work has been established is the fact that owners of homes and commercial establishments can be shown that metal ceilings bring permanence, economy, fire safety, good appearance, sanitation, and freedom from falling plaster.

Henn and Parker specialize in ceiling work. They firmly believe in the sales and profit possibilities of this field of installation. To establish the volume of ceiling work completed last year, the firm has had to develop a sales story which brings a high percentage of orders for sales effort expended.

The firm's sales efforts are based upon two classes of activity. The first is the use of letters directed to selected groups of buyers; the second is the use of specially prepared and specially coordinated pieces of direct mail matter.

The firm has built up a mailing list of some 3,500 names. These names were secured from the company's books and include all former or live customers, all prospects or persons for whom bids have been prepared. Additional names are secured from local tax assessment offices, from the library and from



TELEPHONE HARRISON 6-9742

FRED N. PARKER
SECY. & TREAS.
ESsex 2-9387

JOHN HENN, JR.
PRESIDENT
KEARNY 2-2090

H P

METAL CEILINGS & J-M ASBESTOS WALL TILE

HENN & PARKER, Inc.
9 HAMILTON STREET
HARRISON NEW JERSEY

Dear Friend:

Are your ceilings safe for the children? Do they look presentable to your friends? Does your wife enjoy clean and comfortable surroundings? Are your repair bills numerous?

If you feel satisfied with your ceilings you don't need us now--but if your ceilings are not reliable or satisfactory why not give us a trial? We specialize in metal ceilings for the living room, dining room, bedroom or any room in your home. If you once have metal ceilings erected by us, you will never need or want any other kind.

NOW IS THE TIME TO HAVE IT DONE. We are at your service and you can rely on us for prompt and efficient work. Estimates cheerfully given, prices reasonable.

Yours sincerely,
HENN AND PARKER, Inc.

JH:POB

The letter to home owners stresses safety, economy, appearance

all real estate board's listings. The reason for using names from such diversified sources lies in the fact that special efforts are made to get property owners and real estate firms who have renting and selling lists.

These lists are checked thoroughly each year. In addition, additions are made from time to time as new customers or new firms appear.

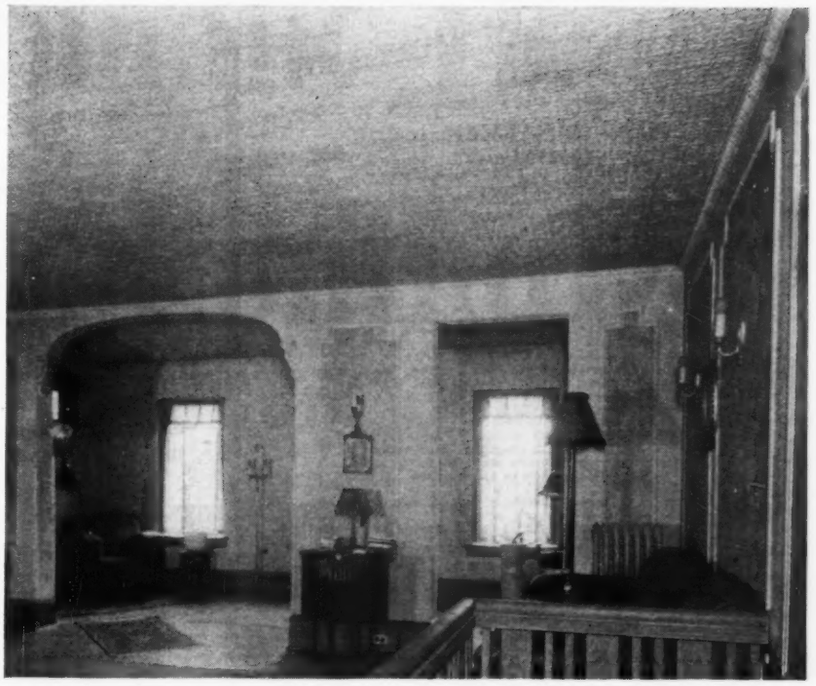
How Letters Are Used

Samples of the letters used are shown in the illustrations. These three letters are directed as shown to home owners, to nearby boards of education for school work, and to real estate operators. The letters indicate that the special problems of each type of prospect have been studied and that the letter is designed to show how metal ceilings overcome these problems.

For example, in the letter to realtors, emphasis is laid on how shabby ceilings prevent rentals or sales and points out how such ceilings produce good appearance at an economical expenditure.

The letter to boards of education carries some results which show the added fire resistance of metal and emphasizes the point that metal replacement can be made without loss of time or room service.

Another illustration shows two calendars which are mailed to home owners and realtors. The home owner calendar contains, inside one of the folds, a valuable set of cookery recipes. These calendars are sent to prospects and are also mailed out each year to old customers. So valuable has this calendar proved that requests are constantly received stating that the owner would like a new calendar or has not received the latest one.



This living room shows the attractiveness of the small patterned ceilings recommended by Henn and Parker

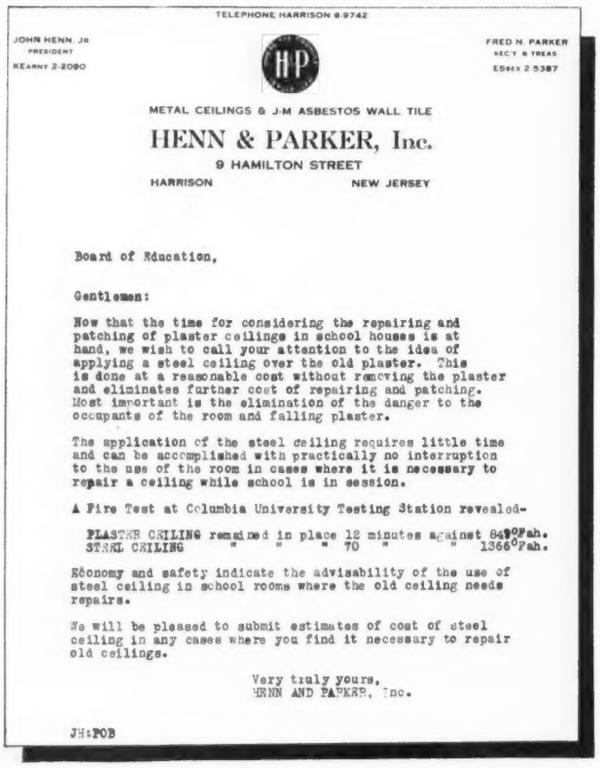
Here are the two calendars used by Henn and Parker. The left one is given home owners and contains a set of recipes. The right one goes to architects, contractors and realtors

Calendar Mailing

The other calendar, which is also a daily memorandum, is sent to architects as well as realtors, and contractors doing remodeling work. This memorandum has also proved highly acceptable and draws requests for the latest issue each year.

The primary purpose of these letters and calendars is to keep the firm's name always before the buying public. While these mailing efforts serve to remind owners and buyers of the advantages of metal ceilings, direct mail is not counted on to carry all the selling load. Salesmen's calls and constant direct solicitation are also used.

Just what are the selling features used is well explained in the words of Mr. John Henn, Jr., president of Henn and Parker, when he says:



TELEPHONE HARRISON 6-9742

JOHN HENN, JR. PRESIDENT KEARNY 2-2090

FRED N. PARKER SECY. & TREAS ESSEX 2-5387

METAL CEILINGS & J-M ASBESTOS WALL TILE

HENN & PARKER, Inc.

9 HAMILTON STREET

HARRISON NEW JERSEY

Board of Education,

Gentlemen:

Now that the time for considering the repairing and patching of plaster ceilings in school houses is at hand, we wish to call your attention to the idea of applying a steel ceiling over the old plaster. This is done at a reasonable cost without removing the plaster and eliminates further cost of repairing and patching. Most important is the elimination of the danger to the occupants of the room and falling plaster.

The application of the steel ceiling requires little time and can be accomplished with practically no interruption to the use of the room in cases where it is necessary to repair a ceiling while school is in session.

A Fire Test at Columbia University Testing Station revealed-

PLASTER CEILING remained in place 12 minutes against 849°Fah.
STEEL CEILING " " " 70 " " 1366°Fah.

Economy and safety indicate the advisability of the use of steel ceiling in school rooms where the old ceiling needs repairs.

We will be pleased to submit estimates of cost of steel ceiling in any cases where you find it necessary to repair old ceilings.

Very truly yours,
HENN AND PARKER, Inc.

JH:POB

Boards of education receive this letter. Quite a volume of work has been secured in schools. Notice the appeals used

"In selling home owners, we stress permanence, economy, fire safety, appearance, sanitation and the freedom from danger of falling plaster. We also stress our ability to erect metal in an ordinary six room house in two hours without any dirt and inconvenience to the housewife.

Extending the Application

"Years ago most of our calls from home owners were for metal ceiling in the kitchen. To these customers we gradually sold the idea of using small, artistically designed, patterns in living rooms, parlors and bedrooms. It was a difficult job at first because most owners were prejudiced against having metal ceiling in any room but the kitchen. We firmly believe there is an unlimited field for metal ceiling in homes.

"We use about the same type of sales talk with contractors, store owners and apartment building owners, stressing permanence, economy, fire safety, appearance, sanitation and freedom from danger of falling plaster.

"It is our experience that the higher type of architect has become disinterested in the application of metal ceilings because of the class of work most metal ceiling contractors are doing. We are handicapped because of this, and we strive to make every ceiling a first class job.

"We believe in preaching 'service' and 'quality' with low cost and make an earnest endeavor to please. Our slogan, which is on our calendar and memorandum, is 'Where the Promise Is Fulfilled.' We carry this out 100%.

"We strive to keep our name always before the public, so that when anyone needs a ceiling, they will connect ceiling with the name of Henn and Parker, Inc., and call on us.

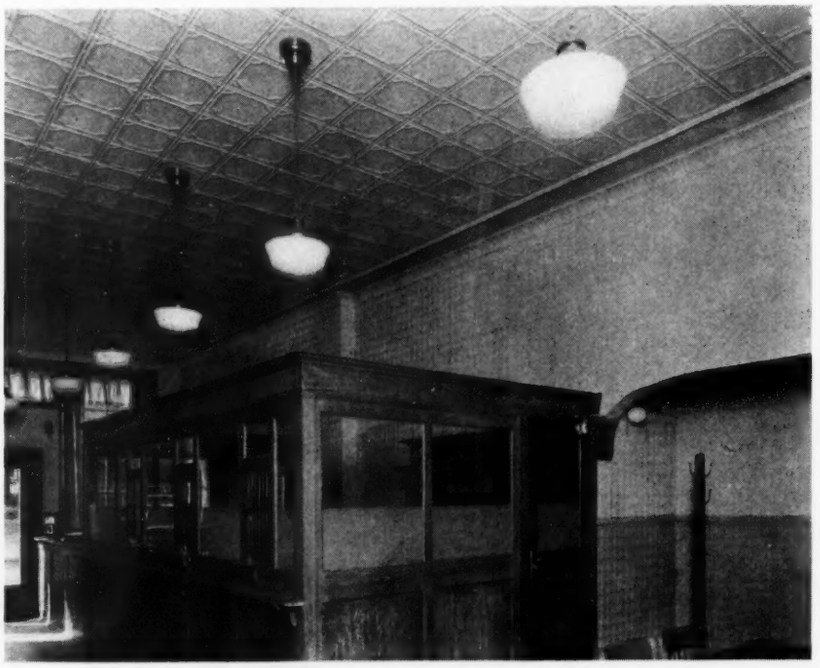
"Most of our work is received through recommendation from our old customers."

How diversified is the field covered by this firm's selling efforts is well illustrated by the photographs showing metal ceilings in stores, homes and commercial establishments.

Selecting Patterns

Probably one of the interesting features of the operation is the stress laid on selecting patterns suitable for the work under discussion. Large patterns are used in commercial establishments, while the smaller and shallower patterns are recommended for homes, small offices, schools and shops.

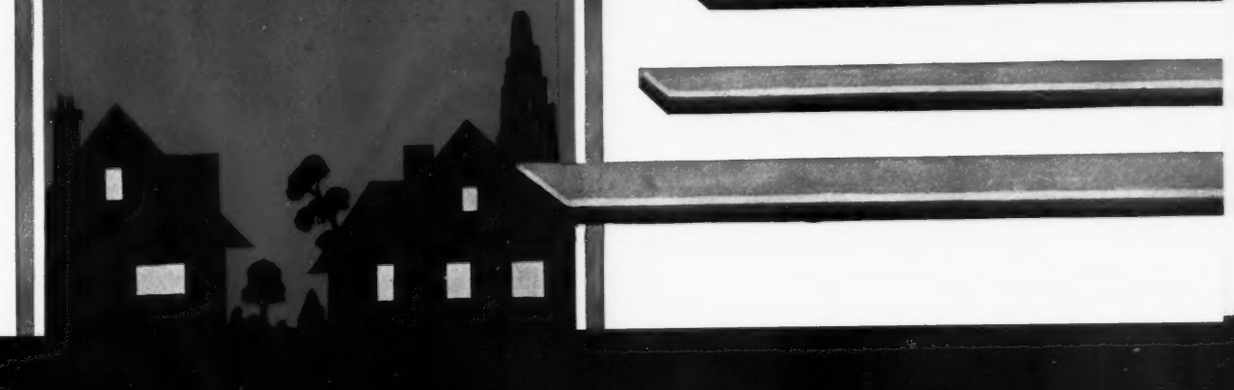
Important, also, is the policy of making every installation so good and so satisfactory that the buyer becomes a booster for metal ceilings and for the Henn and Parker service.



This ceiling and also metal walls were erected in an architect's office. Quite attractive, you'll agree

Automatic Heat *and* Air Conditioning Dealer Section

Automatic heat...and air conditioning . . . this is the combination which is to revolutionize the American conception of comfort in the home and the smaller business establishment. Heat in winter without the drudgery and waste of hand-firing; and winter and summer control of temperature, of humidity, of air motion, air distribution and air cleanliness—these will bring a new comfort in our homes, or as we dine or shop . . . ¶ It is a field requiring special selling technique and adequate technical information. This section will cover both phases completely and put its readers in a position to capitalize on the admittedly large opportunities for the sale of automatic heating and air conditioning equipment.



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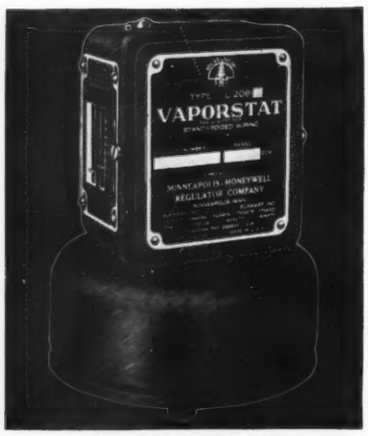

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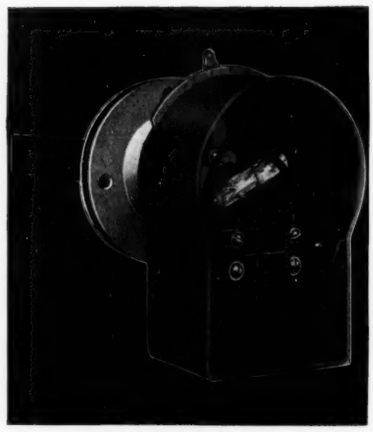


THE AIRSTAT
For warm air systems

MINNEAPOLIS-HONEYWELL
Control Systems

Humidification will unquestionably be one of the most discussed subjects of the coming heating season. Old customers and new prospects will insist on knowing what you can give them; what equipment must be used; how much humidification will cost. Strangely enough, humidification is one of the subjects on which we talk a lot and actually know least about. This article is the first of a series which will give you complete information on humidity. Mr. Tomlinson will work with the Research Residence staff to develop the facts. Some entirely new ideas will also be presented.

Principles of Humidification

By Malcolm Tomlinson

BEFORE we consider humidification—the art of putting water into dry air—a clear concept of air and humidity is needed.

The oxygen absorbed along with air sustains life for human beings and animals. In their turn all living creatures give off carbon dioxide. This gas is promptly decomposed by the sun's rays. Oxygen is thus liberated. To complete the cycle the decomposition which sets in, when life ceases, produces nitrogen. The air; which normally consists of about 75 per cent nitrogen, 23 per cent oxygen, 0.04 per cent carbon dioxide and traces of the rarer gases; is thus renewed.

Quite naturally air picks up impurities such as dusts, bacteria and odors. It also forms a distinct mixture with water vapor, by diffusion, just as ink mixes with water. When common table salt is stirred into pure water a point is reached, dependent on the temperature of the mixture, beyond which no more salt is dissolved. In the same manner, also dependent on temperature, there is a limit beyond which air does not mix with water vapor. This limit, known as the saturation point or 100 per cent relative humidity, is shown in Fig. 1.

Saturation Point

This saturation point is the source of a great deal of trouble for those who would humidify. Special care must be taken not to humidify too much for, at 100 per cent relative humidity, any water vapor in excess of that required for saturation is sure to condense out of the air in the form of rain or fog. This is not all. Even at humidities somewhat lower than 100 per cent moisture is quite likely to condense out of the air on ceilings, walls and furniture.

When water vapor in the air mixture is less than that required for saturation the *ratio* of the water vapor present to the amount needed for saturation gives the per cent relative humidity. Suppose 20 grains of moisture are mixed with each pound of dry air and that 80 grains are necessary for a saturated mixture at the prevailing temperature. Then

$$20 : 80 = X : 100 \text{ per cent}$$

$$\text{or } X = \frac{20 \times 100}{80} = 25\% \text{ rel. hum.}$$

This calculation can be duplicated graphically on the psychrometric chart in Fig. 1 where the relative humidity lines slant towards the right hand side of the chart. The absolute humidity, on the other hand, is *not a ratio* but is the amount of water vapor present

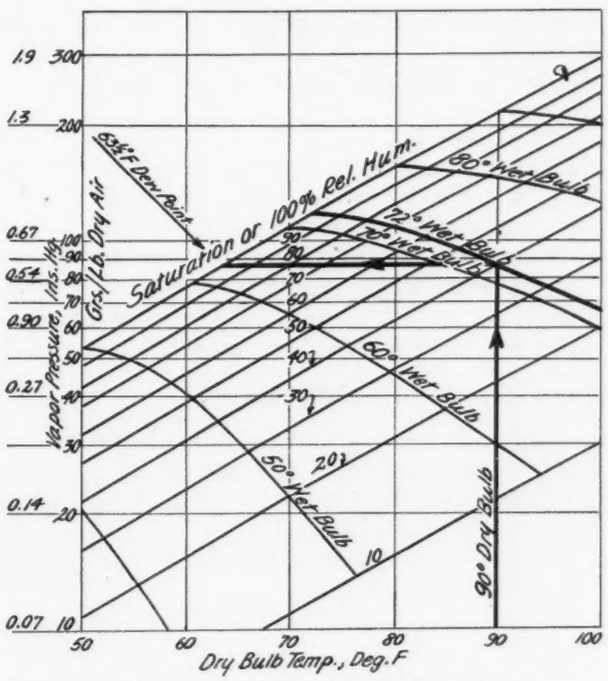


Fig. 1—Tomlinson Psychrometric Chart. When the dry bulb and relative humidity are known, the wet bulb and dew point are easily found. The heavy line shows a typical condition

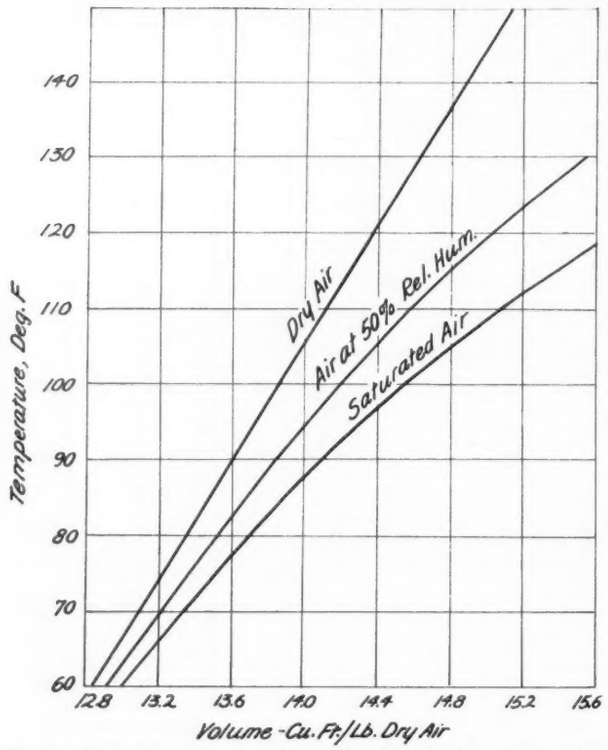


Fig. 2—The amount of moisture in the air determines the volume of the air. Adding moisture increases the volume for a fixed temperature. The three lines show this increase in volume

irrespective of the temperature, pressure or relative humidity.

Thus, for the preceding problem, the absolute humidity is 20 grains per lb. of dry air. As there are 7,000 grains in a pound we may express this result as $\frac{20}{7{,}000}$ or 0.00286 lbs. per lb. dry air. The absolute humidity for saturation is 80 grains, or 0.0114 lbs., per lb. dry air.

In Fig. 1 the absolute humidity is one of the left hand indexes.

It is now possible to convert the pounds of dry air into volume (cu. ft. per lb. dry air) by consulting Fig. 2. Such conversion is only done, in air conditioning calculations, when the figuring is finished so as to eliminate the extra work involved in constantly changing air volumes as the temperature changes. A pound of air-dry remains a pound irrespective of the temperature.

How We Humidify

We are now in a position to humidify. To do this it is only necessary to learn how to put water into the vapor form so that it will mix with the air by diffusion. At first glance this appears an extremely simple problem but, as so often happens, simple problems are usually hard to solve.

There are four general methods now used to meet this problem. The oldest depends on the temperature of the room to vaporize water in open vessels. A second is similar to the first except that heat is applied either to the outside surface of the vessel or directly to the water in order to keep the water at a higher temperature level. A third is a motor driven disk. A fine stream of water, under pressure, is driven against this disk as it revolves at a high speed. The rough surface of the disk breaks up this water stream into fine particles and throws the water off into the surrounding atmosphere in the form of a mist. In this method, as in the first, the heat in the surrounding air must effect any evaporation that occurs. The fourth uses spray nozzles, operated by air or water pressure, which also turns the water stream into a fine mist. Through variations in design the fineness of the water mist, the width of the "spray" and the distance which the "spray" travels can be controlled. Again the temperature of the surrounding air must be depended upon for vaporization. The last method is used in air washers to saturate the incoming air. Beyond the spray chamber the moistened air passes through heaters which raise its temperature to the desired point and thus lower its relative humidity from 100 per cent to the per cent wanted.

The question naturally arises as to the comparative merits of these four systems. This question will be answered clearly in the article to appear next month.

It is now possible to discuss mistaken concepts regarding humidification. The first one which we will consider is concerned with *how* evaporation takes place and what is necessary to vaporize water.

The Fallacy of 40 Per cent R. H.

The *rate* of evaporation depends on four factors: 1. The area which the water presents to the air, as in pans or other open vessels. 2. The dry bulb temperature of the air immediately above water. 3. The wet bulb temperature of the air immediately above the water. 4. The rate at which the air moves over the water. Of these the second and third factors can be combined into a single factor—the difference between the dry and wet bulb temperatures. This difference is known as the wet bulb depression. It is interesting to note that this wet bulb depression, together with the dry bulb temperature, is a measure of the relative humidity.

These factors may be picked out, very easily, on the psychrometric chart in Fig. 1. The dry bulbs are indexed at the bottom of the chart and follow the vertical lines through the chart. The wet bulb temperatures follow slightly curved lines which originate on the saturation line and move to the right. The point of origin for any wet bulb line is the intersection of the saturation line with the dry bulb temperature line, which has the same temperature as the wet bulb. In other words, the dry bulb and wet bulb temperatures are exactly identical at saturation or 100 per cent relative humidity. If, for example, the dry bulb is 90 deg. F. and the relative humidity is 40 per cent, the wet bulb is found by following the 90 deg. dry bulb line until it intersects with the 40 per cent relative humidity curve. The correct wet bulb will be the wet bulb line that intersects at this same point. The wet bulb sought is 72 deg. The wet bulb depression is, then, the difference between 90 and 72, or 18 degrees. As this depression grows smaller, the rate of evaporation decreases. Therefore a high rate of evaporation is obtained by a large wet bulb depression.

Certain conclusions may readily be drawn from

these relations. For *continuous* evaporation heat must be applied in order to keep a *constant wet bulb depression,* and, to obtain a *high rate* of vaporation, the liquid must be held at a temperature *equivalent to, or above, the boiling point.* Also controlled air motion must be provided to move the vapor from the liquid surface as fast as it is formed.

Evaporation Depends on Five Factors

It is commonly believed that a fixed minimum relative humidity, generally stated as 40 per cent, should be maintained during the heating season for comfort. There are two reasons why this belief is wrong. In the first place no conclusive evidence has been produced to indicate the *minimum* relative humidity for human comfort. Research data for 30 per cent and for 20 per cent relative humidity are extremely meager and are not sufficient for any conclusions.

Some air conditioning engineers insist that 40 per cent is the minimum limit. Others point out that the Arabs have lived under desert conditions (about 10 per cent relative humidity) for centuries, that tuberculosis is still treated by the use of dry climates and that the research information at low humidities must be completed before a minimum humidity can be determined.

In the second place, maintenance of a constant relative humidity, say 40 per cent, is sure to result in condensation on walls and inside of building materials, in climates where humidity and temperature changes are quite marked, and in houses where glass and wall heat losses are so high that the dew point is reached at relatively high inside temperatures during cold weather. The destructive and objectionable effects of moisture on windows, plaster and wall paper are too well known for anyone to take such chances.

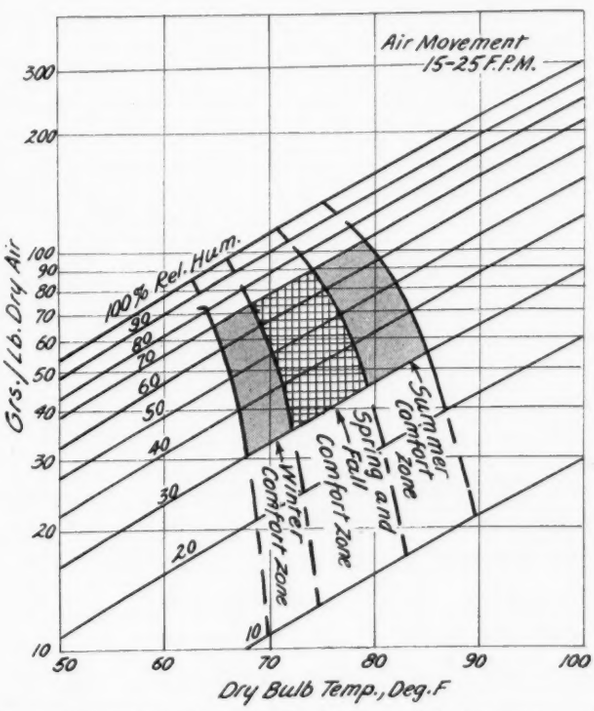


Fig. 3—Comfort requirements change with the season of the year. The zones shown are recommended by the A. S. H. & V. E. committee on comfort. Note that three zones—not one—should be understood.

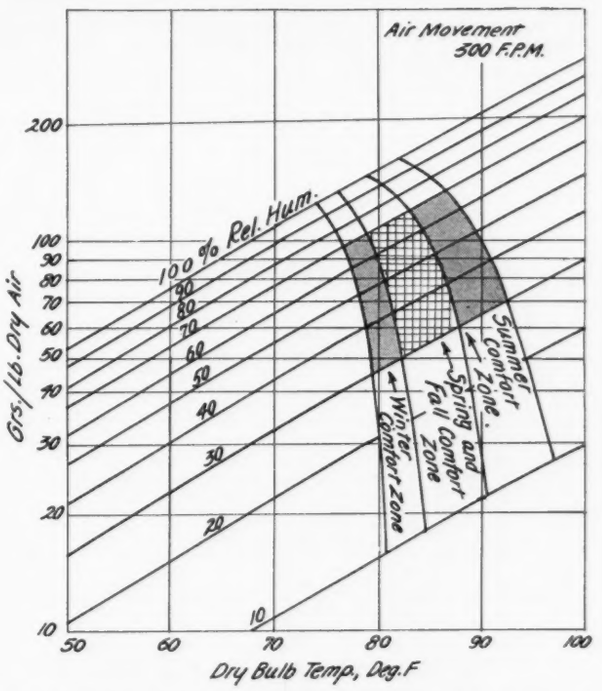


Fig. 4—Comfort requirements also change with the speed at which the air moves. As the air velocity rises we are able to stand higher temperatures. This chart is valuable for forced air installations which must be handled differently from gravity

A third misconception is that no changes in buildings are necessary when humidification equipment is put in operation in an old building. Artificial conditioning of air is impossible if windows are not kept closed, if the infiltration of air through cracks around doors and windows is not reduced and if windows are not provided with storm sash. These may be considered minimum requirements and it is possible that walls and roofs may have to be insulated also. No one can afford to air condition the outside atmosphere or to have moisture attack materials in buildings. Furthermore the need for insulation increases with the per cent relative humidity maintained.

Importance of Humidity

Since there is a possibility that humidities below 40 per cent may prove satisfactory for some climates someone is likely to suggest that humidification is not necessary at all. This is not a logical conclusion from the above discussion. Humidification insures a marked reduction in the dust and bacteria content of air, eliminates odors, does away with the dangers to human beings and furniture from excessively dry air, gives a bouyant feeling that drives away fatigue and makes sleep possible in hot weather. Of course a lower minimum for humidification would be an advantage, to both the contractor and to the user, in that operating expenses would be lowered.

There is also considerable misapprehension as to what the comfort data really indicate. The general impression has been given that we need to be cool to be comfortable. At the same time most of us, in hot or humid weather, are thankful when the oppressive heat or humidity is reduced. While there is an adver-

tising feature in "cold" air, it is altogether possible that the difference in operating costs will be sufficient to influence most people away from the idea of coolness.

Practical Comfort Charts

Recently a committee of the American Society of Heating and Ventilating Engineers reviewed the comfort data and made certain recommendations with a view towards clarity. Their recommendations are embodied in Figs. 3 and 4 and in Table 1. They would limit the relative humidity furnished for human comfort to the range between 30 and 70 per cent, provide three comfort zones to meet winter, spring and fall and summer conditions and would set up a standard for indoor atmospheres under various outdoor conditions in the summer. An examination of these data will prove helpful in establishing more definite procedure in furnishing comfort.

Table 1 is as follows:

TABLE 1.

Desirable Indoor Conditions to Meet Outside Summer Weather (Exposure less than 3 hrs.)

	Inside Air	
Outside. Temp.	Dry Bulb	Rel. Hum.
Deg. F.	Deg. F.	%
95	80	45
90	78	48
85	76.5	52
80	75	52
75	73.5	57
70	72	60

This table has been provided particularly for the air conditioned commercial buildings such as theatres, department stores, restaurants and public buildings. In these establishments such a balance against fluctuating outside temperatures, in hot weather, is needed to avoid severe physical shock to those leaving the buildings so conditioned.

The purpose in presenting this chart is to show what the practice is under commercial conditions and to bring out the point that similar practice may be needed in the home. Therefore, a fixed humidity, on the basis of balance alone, is not so good. This fact leads to the conclusion that the user of air conditioning equipment, even though provided with automatic controls, must learn to manually adjust both temperature and humidity under abnormal weather conditions.

Zones Vary with Velocity

In Fig. 3 is found the recommended zones for comfort under an air movement that corresponds to gravity operation. Here the relative humidity range is from 30 to 70. Three zones are provided. One is for summer conditions when the clothing worn is light in color and weight. The neutral zone fits the spring and autumn seasons. The winter zone meets the condition of cold weather and heavy clothing. Also the upper limit of temperature is 85 deg. F. for 30 per cent relative humidity.

The comfort chart given in Fig. 4 is for 300 F. P. M. air movement or the usual fan operation while the humidity range and the designation for zones correspond to those in Fig. 3. This air velocity is probably a minimum for many air conditioning jobs in private homes where it is not so easy to keep air velocities at a fixed figure and also where upper floors are likely to have a higher air movement than the first floor. Here the dry bulb temperature for 40 per cent relative humidity is 91 degrees for the upper limit of the summer zone. An equal sensation of comfort is very likely to be had at 94 deg. dry bulb and 20 per cent relative humidity.

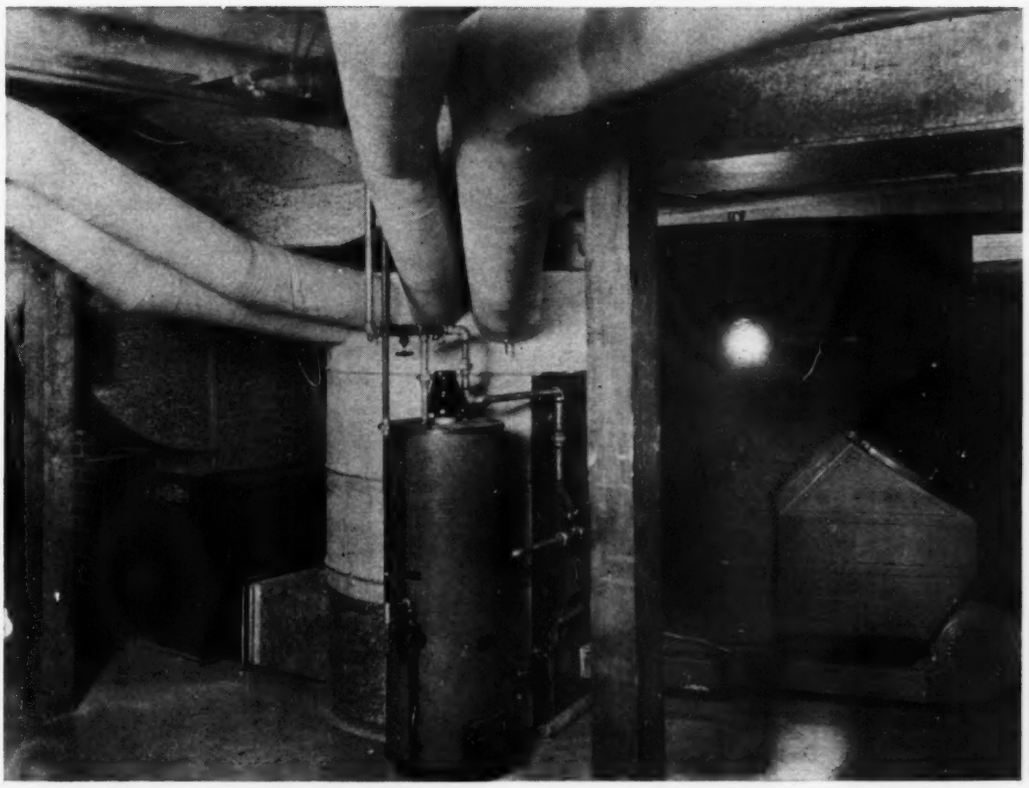
Zoned Charts Practical

These charts and Table 1 thus show what can be done not only in the zone of recommended relative humidities but also in the lower humidities.

These comfort data have been interpreted in terms of the dry bulb temperature and are thus easily understood. They apply to people in normal health, slightly active and normally clothed. Where the air movement is higher than 300 F. P. M. higher dry bulb temperatures are needed to give equal comfort.

So far we have seen how evaporation takes place and its controlling factors, we have learned that humidities lower than 40 per cent are within the range of reason, we have found that buildings must be checked and tightened in order to obtain best results with humidification and we have obtained a picture of the latest situation in the use of human comfort. In addition there have been provided data which, used with a due regard to their limitations, will enable the reader to plan economical humidification layouts for human comfort.

Since humidification is such an important subject and certainly a subject every heating and air conditioning dealer ought to understand thoroughly, we invite readers to ask every possible question on the articles in this series. Every question will be answered promptly, either as a direct reply or on the pages of American Artisan, as you wish. Don't think your questions silly, for even good engineers have to think well before they answer humidification questions.



Automatic Heating with Stoker Scores Remarkable Economy Record

"ONE of the most interesting installations we have made in the last few months," says C. S. Soedler, automatic heat and air conditioning dealer of Peru, Illinois, "is in a house which was built for speculation on a lot which I owned.

"The original heating system planned called for a straight gravity plant without any frills or accessories. However, the house proved attractive to one of our citizens and satisfactory in every way excepting for the heating system we intended to install.

"This particular prospect is in the lumber business and sells a line of domestic stokers. Being so much interested in stokers he naturally wanted one in his new home, but was not quite sure just how it would work. Besides he wanted a system which would demonstrate the capabilities of the stoker to best advantage.

"The natural result was that our activity in forced air and air conditioning coupled with his interest in stokers led to our getting together and laying out a system which probably is one of the best examples of small automatic heating plants to be found in our territory.

"As finally developed the heating plant consists of a modern type furnace, a domestic stoker, a blower with filters, and complete automatic humidification and control."

The system described by Mr. Soedler has a number of interesting features, especially in view of the size of the house. The number of accessories used with the furnace makes a plant which has one exceptionally long axis. It was first intended to place this axis across the basement, but the space was not sufficient so the plan had to be placed with the long axis the length of the basement. The photograph shows the blower and stoker coupled to the furnace and ready for operation.

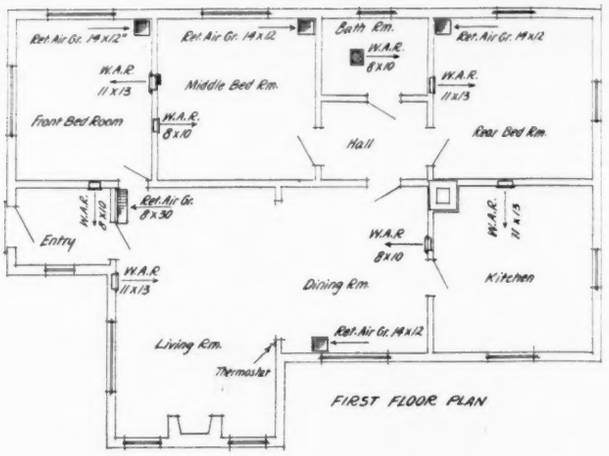
Round pipe leaders are used from the bonnet with rectangular between-joist and across-joist cold air returns. The bonnet is carried up as far as the leader elbows will permit to effect a plenum for thorough mixing of heated air before the air enters the runs. Because the system has the pressure blower, the leaders are run flat across the basement—some of them for quite a length.

An item which shows on the piping plan is the even distribution of leaders around the bonnet. There are four leaders totaling 36 inches in diameter on each side of the center line. The fan is cut in practically between these two groups.

Return air collection is well distributed throughout the various rooms. Registers, with the exception of the bathroom, are all baseboard, while returns are located in the floor in corners but still near the windows.

The system was carefully engineered from a data sheet showing every factor considered. The total heat loss is just over 85,000 B.t.u. per hour for a tempera-

The floor plan to the right shows the location of registers and grilles and the thermostat which was moved a number of times to get just the right location for most uniform results. Note the spotting of returns adopted to get distribution



ture rise of 80 degrees. The total C.F.M. required is 1214.

Mr. Soedler's firm is the Soedler Hardware Company and handles all types of sheet metal and heating work. He does not handle stokers, but he is agent for a line of oil burners and has a number of successful installations.

Mr. Soedler reports on the operation of the system: "Mr. Seitz, the owner, used the fan for air circulation during the hot weather of this past summer and relates some surprising results.

"For instance, on several days when the temperature outside was close to the 100 degree mark, the fan operating in the tightly shut house resulted in inside temperatures close to 80 degrees. By confining the fan operation to a few rooms, Mr. Seitz says he was always able to make the sleeping rooms comfortable every night. During the daytime, by still further adjustments of register valves he was able to drop temperatures in living rooms.

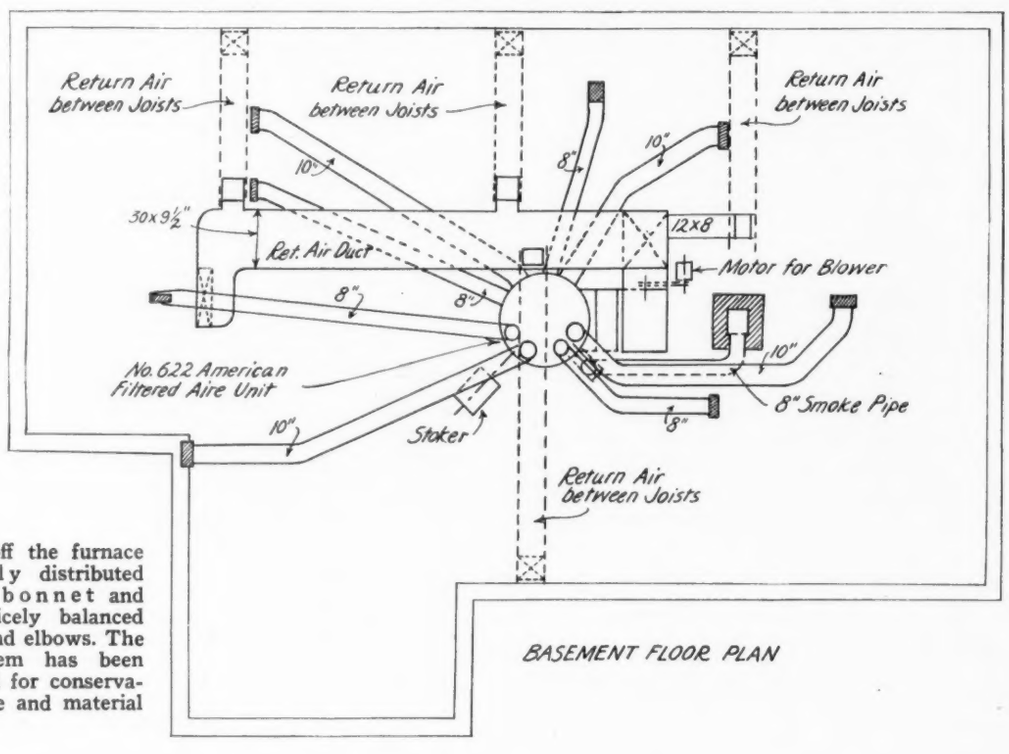
"During the last winter crushed coal costing $6.00 a ton was used. Of course the past winter was a comparatively mild one, nevertheless the record of five tons of fuel for the season is, we think, remarkable. Best results were obtained with the coal wetted down. This coming winter Mr. Seitz will probably do some experimenting with other grades and prices of coal.

"This system has proved so successful that we have installed others like it, and we have also used the features proved out on this installation for some of our oil burner-furnace systems which must operate under practically the same conditions and render the same type of service.

"While we do not operate in a large territory, nor have a long list of prospects who can or will spend the necessary money for real air conditioning, we early determined and firmly believe in the sales possibilities and future of automatic heating.

"We feel that there are many, many home owners who want and will buy the comfort, economy and satisfaction which automatic heat brings. When this automatic operation is coupled with some degree of air conditioning, the result is satisfaction to the home owner and to us.

"It is our contention that automatic heating is just now becoming a real factor in domestic heating. The equipment is plentiful and perfected. Certainly the demand for this economy and relief from drudgery is evident, even in the smaller communities. All that remains, then, is for the furnace man to make the decision to actively push this class of job and then go to work."



The pipes off the furnace are equally distributed around the bonnet and runs are nicely balanced for length and elbows. The return system has been well planned for conservation of space and material

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HARRY ALTER, President
1730 SOUTH MICHIGAN AVENUE CHICAGO, ILLINOIS

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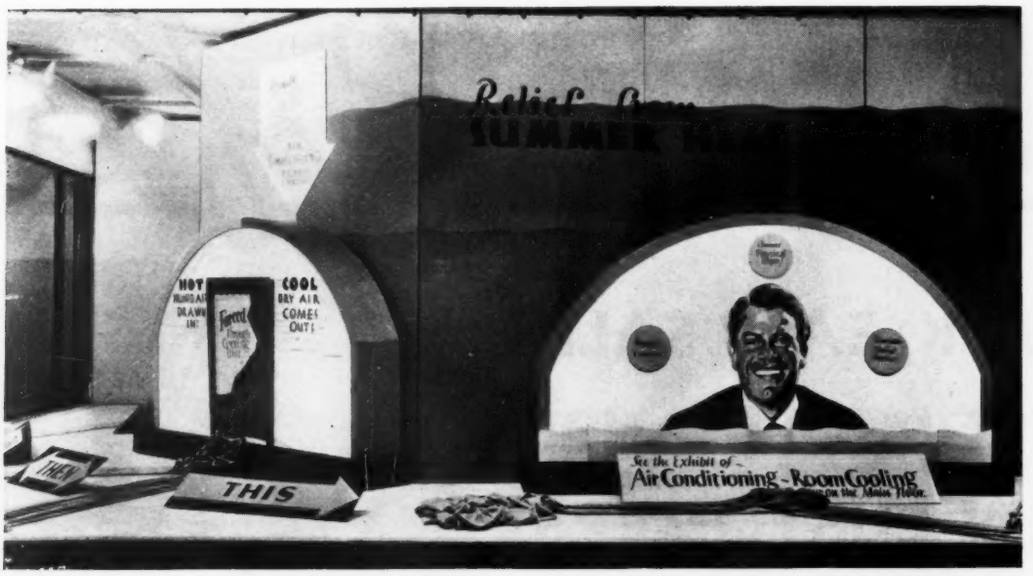


Cooperative Display Shows Air Conditioning to Buying Public

UNDOUBTEDLY one of the most important problems the automatic heat and air conditioning dealer has to solve is the problem of getting his equipment and his service before the buying public. Without knowing exactly what class of prospects can be counted upon to buy his service and equipment, the task of sorting good prospects from the public at large presents a merchandising problem which can easily cost more than necessary or entail far too much lost motion.

With automatic heat and air conditioning still in the formative state, prospects must be educated from the ground up. These prospects do not, as a general rule, have definite or preconceived ideas about the type of equipment required and, furthermore, have little information on costs or results.

The problem becomes, then, one of complete education by some means which will cost proportionately to the results obtained.

Understanding, as most dealers do, what has to be done, we find that newspaper advertising, shop and store display, direct mail of all kinds, and house to house solicitation have been resorted to in the effort to arouse public interest.

In several cities scattered over the country, this public interest in air conditioning has been concentrated on education through prominent displays conducted cooperatively by firms engaged in the manufacture and sale of air conditioning equipment. A typical example of this type of educational program is the air conditioning display conducted in St. Louis by some sixteen manufacturers and sales agencies in the downtown building of the Union Electric Light and Power Company.

This co-operative display was probably the first venture of its kind staged. The display opened early in the summer and was kept open all during the summer season.

The firms which used space are as follows:

American Furnace Company
American Air Filter Company, Inc.
Artophone Corporation
Carrier-York Corporation
City Ice & Fuel Company
The Del-Home Light Company
Ilg Electric Ventilating Company
Koolair-Maker Corporation
Merchants Ice & Coal Company
Modine Mfg. Company
St. Louis Rfg. & Cold Storage Company
Standard Engineering Works
York Ice Machinery Corporation
Sodeman Heat & Power Company
S. C. Sachs, Inc.
Union Electric Light & Power Company

Results obtained by firms using space indicate that this centrally located type of exhibit should prove a logical and productive means of getting the necessary education to the buying public at a minimum expenditure of money, time and effort.

This St. Louis exhibit was well planned. The general plan of the display can be used by other cooperative groups.

One of the most important features emphasized by the display is the value of using centrally located and well patronized space. In other words, these exhibits should be located where large numbers of per-

Central air conditioning units and equipment were placed in the basement with some conditioned air piped to the street floor display. Salesmen were maintained to explain operation and answer prospect's questions. This is the American Furnace Company's display.

sons, preferably home owners or users of automatic equipment, gather frequently. Some other displays staged this year in out-of-the-way buildings required real effort to reach and demonstrated that the pulling power of such locations is considerably less than the central location.

Another feature demonstrated was the value of so arranging the merchandise that large numbers of persons can look and watch equipment in operation without crowding and in comfort. In the St. Louis exhibit a first floor space was used for room coolers and small movable devices while the large central systems were placed in the basement. Both spaces were well lighted, clean and attractive and enhanced by suitable background and display scenery.

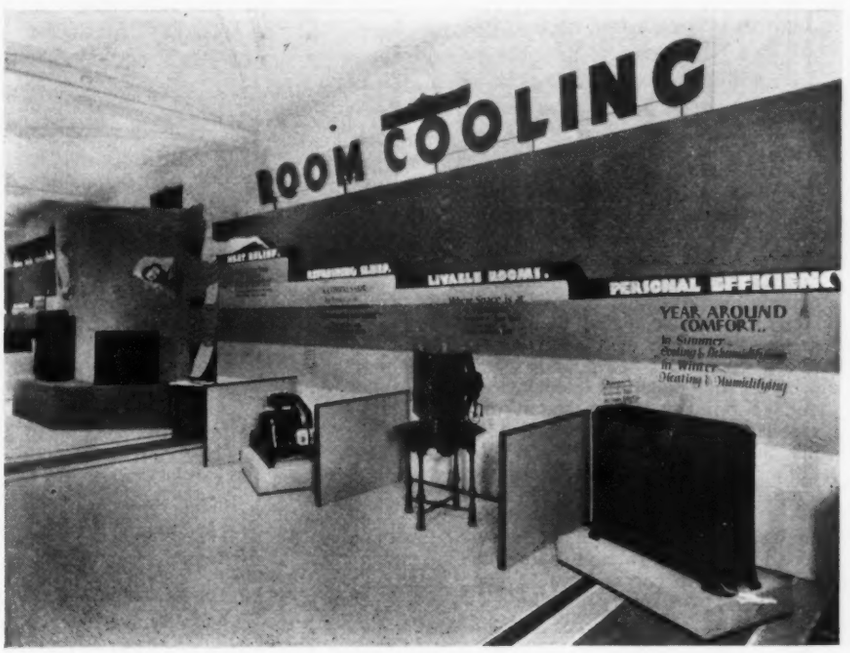
Probably the third most important feature emphasized was the value of having all equipment operating. Equipment which is designed to give comfort, heat, automatic operation or cooling is many times more effective when these results are actually demonstrated than when the units simply show workmanship, paint, and appearance.

In the St. Louis effort, all units were shown operating. The large central units in the basement were piped into the first floor space through attractive grilles before which visitors could stand and actually feel the results. Small units were given plenty of space so that a group might witness operation and feel results in typical space restrictions.

Each exhibitor was permitted to have salesmen and engineers in his space. The purpose of these men was to answer questions, explain how the units operated and give definite recommendations for specific installations the visitor had in mind.

Reports from the exhibit indicate that attendance was continuous during the show and that public interest exceeded expectations. The users of space state that they believe this type of advertising shows public response and return proportionate to the time and amount of money expended.

Undoubtedly there will be many of these exhibits during the coming months, especially next summer. Automatic heat and air conditioning dealers should be interested and give serious thought to this method of focusing public attention upon their products and their services.



On the street floor, small room and space units were arranged for display and public inspection. The display was divided into two main sections—one for room coolers; the other for conditioners.

Comfort Cooling For Homes

By H. J. Macintire

A Series of articles discussing the basic principles of cooling and the application of present equipment and methods now in use

Cooling By Mechanical Refrigeration

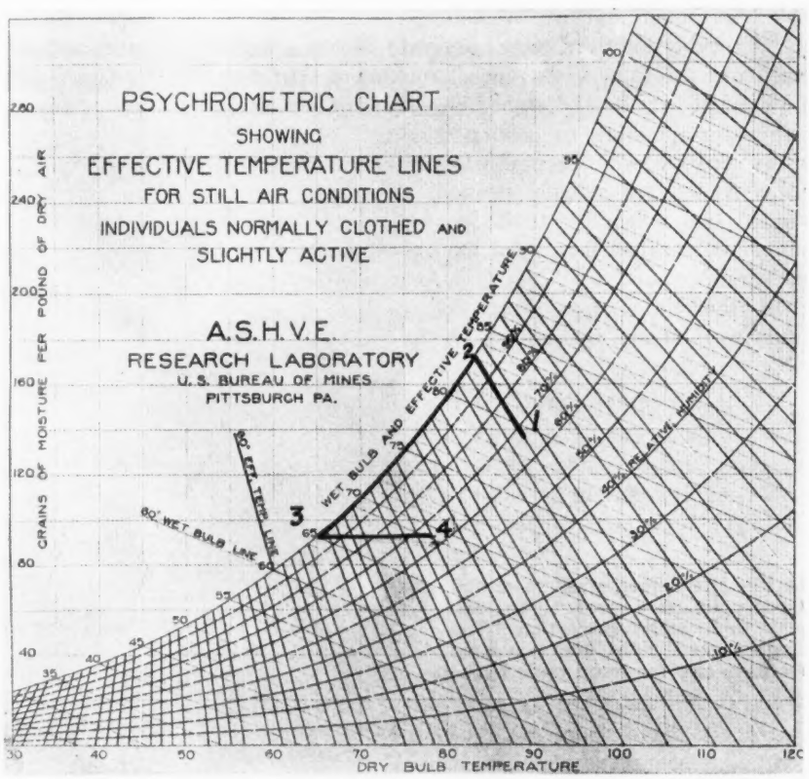
IN AIR conditioning, as is understood when comfort cooling is referred to, there are three considerations that need attention. It is essential that the moisture in the air have a correct relation to the temperature and that the temperature be controlled so as to give that sensation which the average person considers as comfortable. The third consideration is the amount of air to be circulated, including a certain amount of fresh air, which must be sufficient according to our ideas of ventilation.

The amount of air to be circulated by the fan is determined, at its minimum, by the amount of the cooling load. Since the "heat capacity" or in other words, the specific heat of the air is 0.24 B.t.u. per pound per degree F. rise of temperature, then 100 B.t.u. will require $100 \div 0.24 = 416$ pounds of air if the rise of temperature is to be only one deg. F. and $416 \div 5 = 83 +$ lb. if the rise of the circulating air is to be 5 degrees F. If the volume of one pound of air is taken as 13.9 cu. ft. then the volume that must be circulated in the latter case will be $83 \times 13.9 = 1160$ cu. ft. So that if the rise of temperature of the circulated air is 5 deg. and 1160 cu. ft. per minute are circulated the heat absorbed will be 100 B.t.u. per min. or the equivalent of 0.5 tons of refrigeration.

It is evident that the only manner of *cooling* is to circulate air cold enough to permit a rise of temperature, without, of course, going higher than the required maximum dry bulb temperature, and the action is very much like that of a sponge which has the ability of absorbing water. In the case of the sponge the process of squeezing permits further absorption of water. Likewise a cooler that continually lowers the temperatures of the circulated air and maintains a constant temperature of exit from the cooler has the ability of absorbing heat.

However, on reference to the usual psychrometric chart, Fig. 1, it will be seen that the only manner of removing *moisture* in the refrigerating machine cycle is to "freeze" it out, or in other words, by cooling the air below the dew point temperature. Therefore, a certain moisture content, when using the refrigerating machine method of air conditioning means a definite depressed temperature to which the air must be lowered.

If the depressed temperature is fixed by consideration of the required moisture content of the air, and the volume of air is fixed from consideration of the sensible heat to be absorbed and the allowable tempera-



The refrigerating process of air conditioning is shown by the heavy line 1-2 3-4. The air entering the conditioner is 88 degrees dry bulb and 65 per cent relative humidity (point 1). Passing through the spray the air is cooled to 83 degrees and 100 per cent relative humidity (point 2). This air is then cooled, the moisture condensing out, to point 3 where conditions are 65 degrees dry bulb and 100 per cent relative humidity. When the air enters the room it picks up temperature to point 4 or 78 degrees. This rise in temperature enables the air to hold more moisture so that the relative humidity falls from 100 per cent to 68 per cent—a satisfactory condition

ture rise it is very evident that if more air than that so calculated is required for ventilation purposes the air may have to be reheated before admittance to the ventilating ducts.

In the previous article on gas refrigeration it was shown that the first consideration was moisture removal and this was done as a separate operation. The second operation, but separate from the first, was that of cooling and the amount of air circulated was dehumidified in part only. However, whereas it is quite true that some installations of air conditioning may require *reheating* after dehumidification incidental with cooling it is quite evident that for residence installations there will not be any such operation.

In fact, the problem of residence cooling is too complex for accurate analysis at the present time. It would be extremely difficult to set up any particular standards as, for example, a definite depressed residence temperature. A residence, properly insulated and carefully constructed, may even require heating of the air at certain periods of the day in order to keep a fixed differential temperature between the inside and the outside, which of course, is utterly absurd. It is more than likely, as a better idea of comfort cooling is established, that the machine will be operated during portions only of the day unless the weather is unusually sultry or extremely hot, as compared with average temperatures in that locality where the residence is placed.

The Refrigerating Machine

The usual refrigerating machine air conditioning plant consists of an electric motor-driven compressor of the volatile liquid type, a water or air cooled condenser and an evaporator or cooling element. The latter may be a set of coils of bent pipe or with disc soldered on them, and they may be operated dry or with water sprayed over the pipes in combination with sprays for additional cooling of the air. The cooled air will be distributed through the duct system as in other installations.

The function of the compressor is simply to make continued use of the refrigerant, which has an ability of absorbing heat only during the *actual boiling* from the liquid to the vapor state. As a vapor it has no ability for further cooling and in order to get it back into the liquid state it is necessary to *compress* the vapor and then to cool the compressed refrigerant to some temperature near that of the atmosphere.

In the so-called condenser, water is usually used and heat is removed by the condenser equal to the actual refrigeration performed plus the work done on the vapor during the process of compression. This amounts to from 225 to 250 B.t.u. per minute per ton of refrigeration, where the ton of refrigeration is defined as the *rate of cooling* and equal to 200 B.t.u. per minute. If water is used as much as 3 gal. per min. per ton of refrigeration may be required which frequently represents an abnormal cost. At the present time all household refrigerating units for refrigerator boxes using the compressor system are air cooled, and it seems as if such a form of condenser will have to be employed in comfort cooling except where water for condensing purposes is reasonably cool and cheap. Of course, a cooling tower could be used, but it will never

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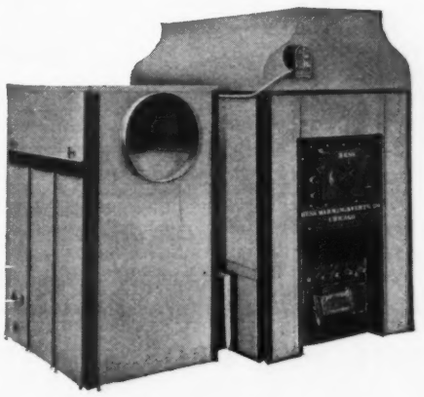

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Hess Welded Steel Furnace with Hess Air Conditioner

The Hess Welded Steel Furnace and Hess Air Conditioner are different and Hess Dealers are doing an increasing, profitable business. Better than others because the Hess line is more salable and offers the most to the user.

There are hundreds of prospects in every community who can be sold air conditioning, if approached with the right equipment at a price they can afford to pay. As shown in the accompanying illustration, the Hess Dealer can offer a complete unit—welded steel furnace and air conditioner—or either one separately in the case of remodel jobs.

Write today for full particulars and dealers' prices. It is not too late to cash in on the business within your reach if you will act at once.

HESS WARMING & VENTILATING CO.
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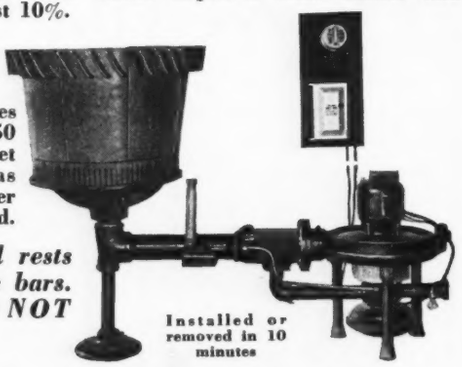
GAS BURNER

It is the cheapest, most efficient, durable, simple, fully automatic, positively safe, COMPLETE Conversion Burner offered today. Furnished with a high grade Pilot Light, accurate snap-action Thermostat, a sturdy relay and a patented Draft Hood which improves both burner and furnace at least 10%.

This size takes care of from 50 to 150 cubic feet of Natural Gas per hour. Larger sizes furnished.

Burner head rests on the grate bars. Grates are NOT removed.

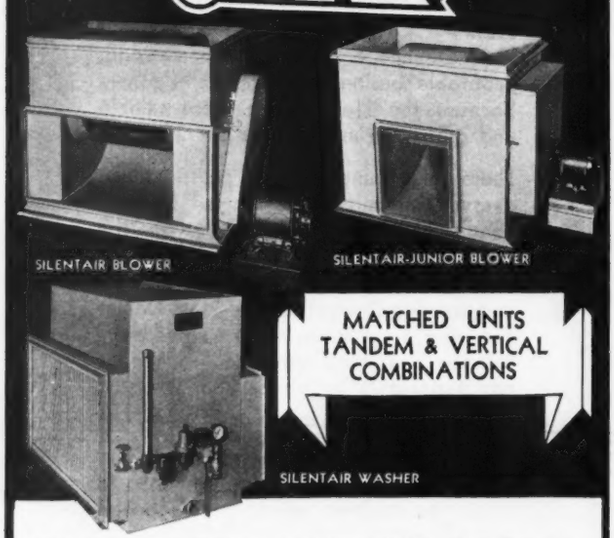


For prices and further information write—

THE BIALOSKY BROS. & COMPANY
6611 EUCLID AVENUE, CLEVELAND, OHIO

THE MOST COMPLETE LINE OF AIR CONDITIONING UNITS IN AMERICA

SILENTAIR



THE success of SILENTAIR AIR CONDITIONING UNITS results in no small measure from the fact that they are MATCHED UNITS — properly designed — fully equipped — guaranteed ratings; easily installed with any warm air furnace. They bring splendid profits to dealers, and comfort and economy to home owners. Write for descriptive literature.

Built Up to a Standard—Not Down to a Price

A. GEHRI & CO. Inc.

Tacoma, Washington
1117 S. Tacoma Ave.

Syracuse, N. Y.
400 N. Midler Ave.

give water as cool as the wet bulb temperature, and the tower is hardly an asset to the residence.

Engineering Details

The power required will be ¾ k.w. per ton of refrigeration or less for the compressor. The circulating fan, the pumps, etc., will be extra and the amount will depend on the particular problem. The refrigerant cannot be ammonia, unless water is used on the condenser, but should be sulphur dioxide, F-12, methyl or ethel chloride or some refrigerant of like characteristics.

So far consideration has been directed to the central plant. Of course, separate units can be employed, if desired, designed to cool a room or a set of rooms or simply to dehumidify the air in a single room.

The use of a refrigerating machine for air conditioning is an old established application of engineering. The extension of the field to that of comfort cooling is a natural and easy one. It provides a ready means of securing comfort and ventilation. However, it appears that details need still to be worked out in order to get comfort cooling at minimum first cost and minimum cost of operation.

Watch For These Features

The purpose of the automatic heat and air conditioning section will be to present in usable form information on all the varied problems confronting the dealer. For instance, an article to be published shortly will answer such questions as:

1. How much insulation must be used in second floor ceilings to keep heat in and out?

2. Do I figure insulating value from the coefficient of transmission of the insulating material alone, or does the wall determine how much and what value results from insulating?

3. Is it cheaper to insulate than to provide added heat supply?

Similarly another article will cover conversion burners. The article will answer:

1. Where should the unit be placed in the furnace?

2. How is efficiency affected by the air supply?

3. Must I baffle and how?

Effect the maximum in heating comfort with the

Skuttle
AUTOMATIC HUMIDIFIER

Comfort demands of modern heating, greater evaporation and complete automatic service. This demand is met most successfully by the Skuttle Automatic Humidifier, Type "D"—an achievement in humidification by pioneers in the field.

This humidifier will work efficiently on any type of warm air furnace, maintaining constantly the correct level of fresh, clean water in the evaporating pan, assuring comfortable, healthful humidity, at all times.

The Skuttle Type "D" Overhead Automatic Humidifier

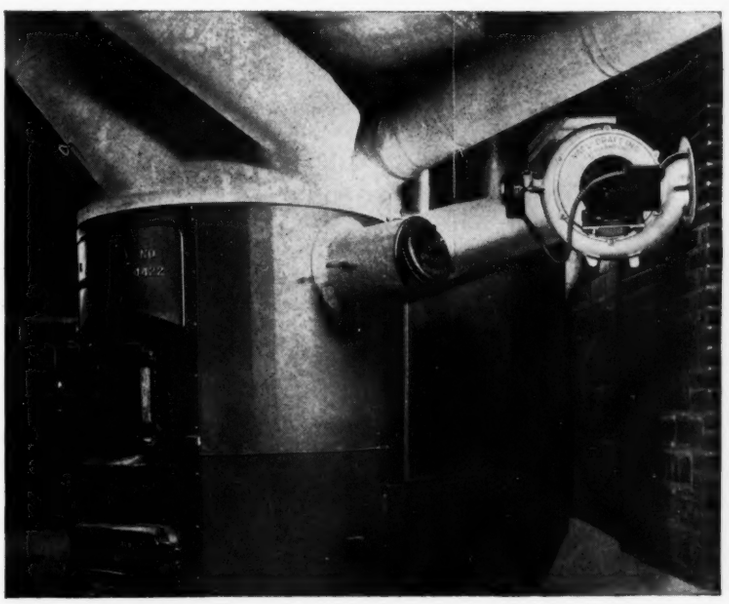
Furnished complete as illustrated, with cast iron evaporating pan, overflow pipe, cast iron trap with drain plug, copper pan containing valve and float, and complete water line connection including 5 feet of copper tubing.

Installation can be made in any size or style casing hood above the radiator or dome. Complete control of the water evaporated is made possible by an adjustable float in the humidifier pan, a feature exclusive with Skuttle Humidifiers, and the slope of the bottom of the cast water pan. An overflow drain pipe also supports the unit in the rear of the hood and has an adjustable slide to control pan level.

Your sales possibilities reach their peak at the start of the heating season. Write for complete information now. Take advantage of the profit possibilities open to dealers handling Skuttle Humidifiers. Desirable for all plants, necessary for oil and gas fired furnaces.

THE J. L. SKUTTLE CO., Dowagiac, Michigan

Modernize Heating Plants *with* VACU-DRAFT



1. *VACU-DRAFT pays for itself in greatly reduced fuel costs.*
2. *VACU-DRAFT provides positive automatic temperature control.*
3. *VACU-DRAFT insures a clean and dustless home.*
4. *VACU-DRAFT insures complete combustion.*
5. *VACU-DRAFT is quiet and will not interfere with radio.*
6. *VACU-DRAFT will operate on any warm air heating system.*
7. *VACU-DRAFT can be installed quickly and without any alterations to heating plant.*
8. *VACU-DRAFT in service in Canada for more than three years has proven its success by thousands of installations.*

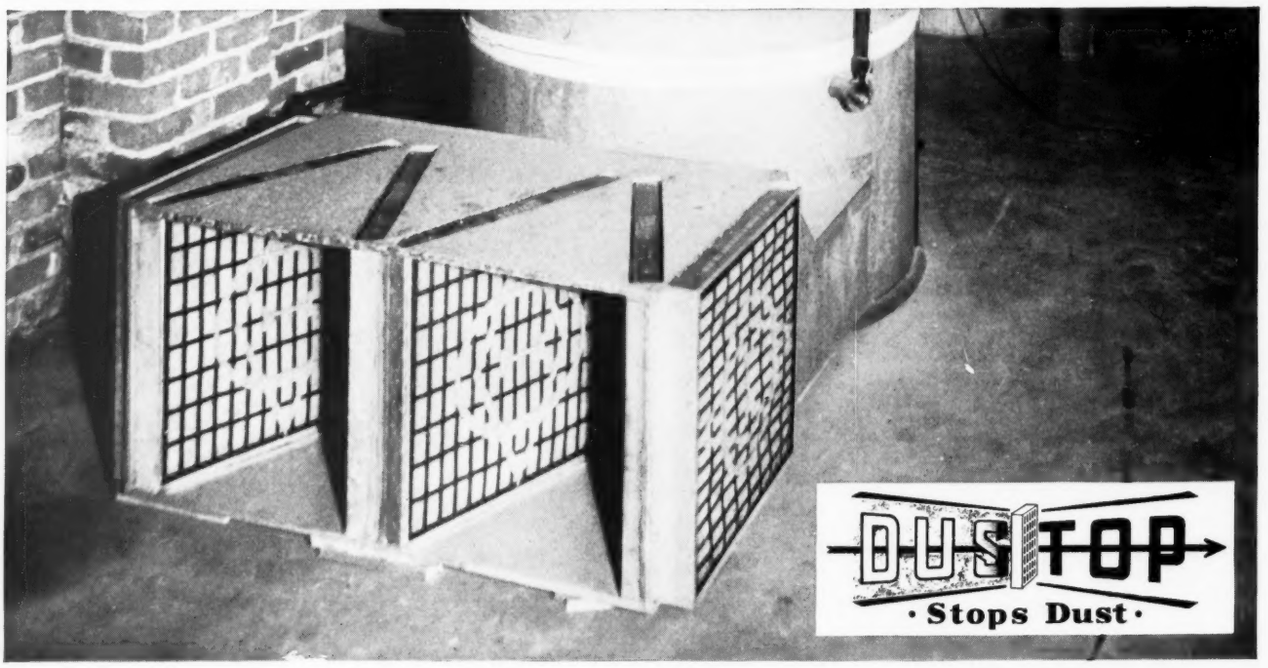
VACU-DRAFT overcomes all of the old-fashioned objections to furnace heat and creates a new degree of comfort, health and economy. Heretofore the possibility of dangerous gases has always been a menace. The ever-present dust and fine ashes, a misery. Now with VACU-DRAFT dangerous gases, dust and fine ashes are drawn out of the furnace and into the chimney, insuring positive safety and a degree of cleanliness unequalled in any furnace.

VACU-DRAFT creates a natural draft, which is as it should be to accomplish complete combustion. Cheaper grades of fuel and complete combustion cause a new maximum of operation economy which is creating sales for VACU-DRAFT everywhere.

Dealers and Distributors:
Enjoy the profits which are following the display of the VACU-DRAFT. Write at once for full information and territory open.

VACU-DRAFT CORPORATION
DIVISION OF MUNCIE GEAR CO.
MUNCIE, IND. New York Office: 1350 BROADWAY

8,500,000 PROSPECTS
and profit in every job



A typical installation of DUSTOP filter units on a standard type of warm air furnace.

● Dust and dirt circulating from 8,500,000 furnaces! 8,500,000 gravity warm air furnaces just waiting for aggressive dealers to install gravity filters!

It's your job to make dirty furnaces clean. You can do this job at a profit—with DUSTOP.

DUSTOP retails to the householder at $1.50. This low figure enables you to use as many of them as are necessary to do an effective job.

Dust is one of the gravest concerns of the modern housewife. There's a smooth selling approach for you. Tell housewives that you can stop furnaces from spreading dust and dirt and you'll get into as many basements as the meter man.

DUSTOP filters will live a whole heating season and more. DUSTOP is the only filter that will do a real job of cleaning on low velocities —as low as 25 feet per minute. And average velocities will run around 140 feet per minute on a moderately cold day.

The new DUSTOP glass wool filter offers furnace dealers a fine opportunity to build up a volume of profitable business.

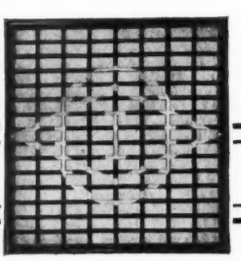
For more detailed information mail the coupon today. You will receive a booklet giving complete information on DUSTOP installation both for gravity furnaces and for the revamping of gravity jobs for mechanical circulation of filtered and heated air. Owens-Illinois Glass Company, Toledo, Ohio.

Owens-Illinois Glass Company (Industrial Materials Division)
Toledo, Ohio
Please send me your booklet "Jobs To Do at a Profit."

*Name*_____

*Address*_____

Furnace filters for gravity and mechanical warm air furnaces



distributed through jobbers and manufacturers everywhere.

OWENS-ILLINOIS AIR FILTERS

Gravity exhaust

VENTILATION

Ventilation For Industrial Cookers

By Paul R. Jordan

THAT the principles of gravity exhaust ventilation can be applied to more complicated exhaust systems for the removal of steam, odors, and heat, is a fact frequently overlooked by the sheet metal contractor looking for new fields for his sales and engineering efforts.

Just how far gravity ventilation can be carried into industry is exceptionally well illustrated by the sketches accompanying this discussion. The installation is designed to carry away heat, steam and fumes from copper cooking kettles in a canning factory in the truck garden district of New Jersey. The contractor who has been submitting the necessary engineering data is E. W. Robinson of Bridgton, New Jersey.

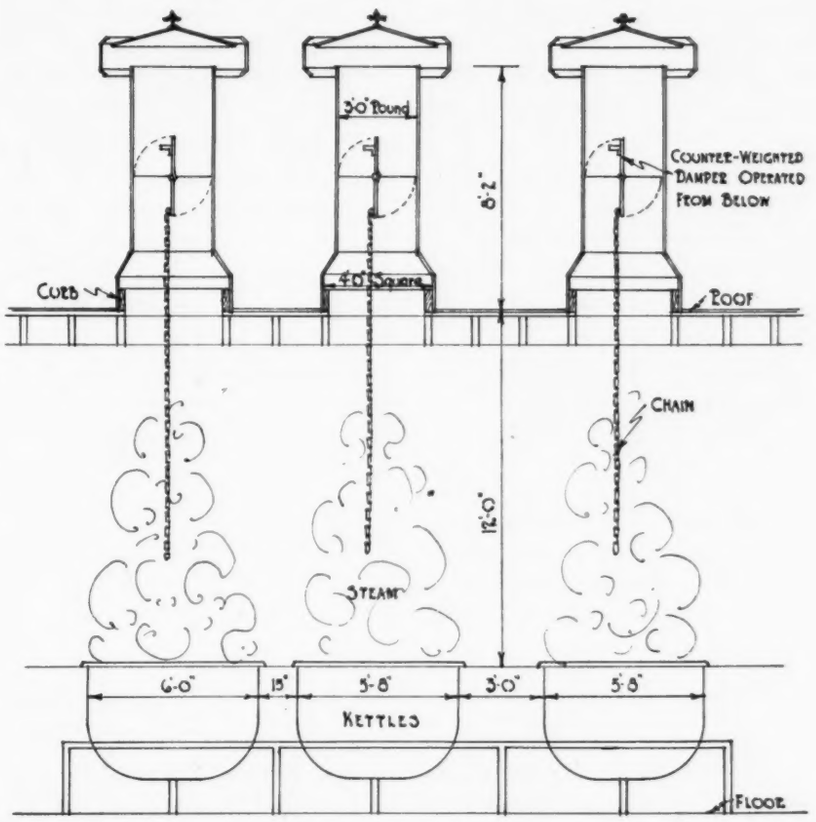
In the installation there are three copper kettles—one 6 feet in diameter and two 5 feet 8 inches in diameter. The capacity of each kettle is 500 gallons. Ketchup is cooked under 80 pounds of steam pressure in these kettles. The kettles are tightly sealed during the cooking process. In the cooking process approximately 60 gallons of water are cooked out of the contents in the kettle, or in other words converted to steam which must be carried away.

In addition to the steam, it is also necessary to carry away the heat generated. The kettles stand in a large open room about 200 feet by 90 feet in area. There are a number of steam pipes around the kettles to further complicate the installation of the required hooding and duct work.

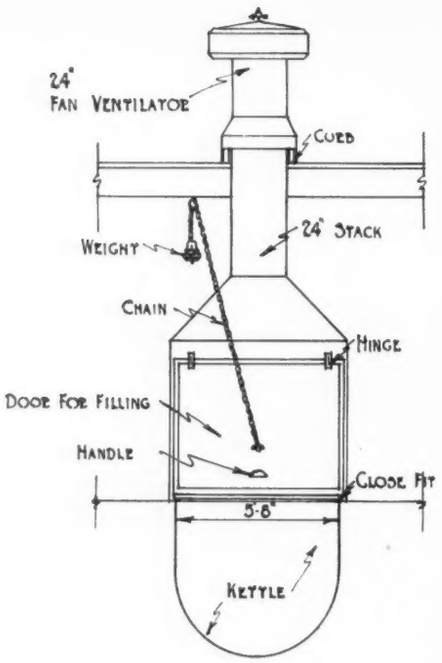
Two suggested solutions to the problem have been worked out whereby the contractor may either completely hood the kettles or exhaust through ventilators placed above the kettle tops. These two suggested installations are shown in the sketches.

Analyzing the sketches and the problem, the first thing which must be considered is cost. If possible, the best system which can be installed will consist of a completely enclosing hood over each kettle terminating in a ventilator by means of a run of duct from the hood to the ventilator. While this system will require some fitting around steam mains, the results will be positive and troubles eliminated.

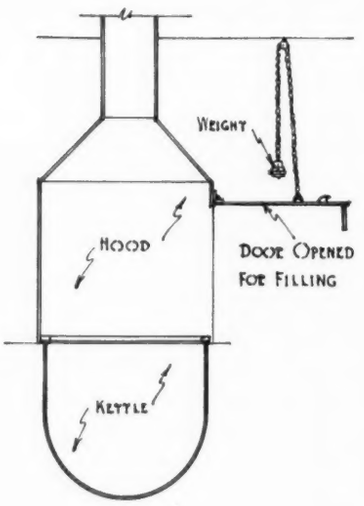
Since the kettles are filled before steam is turned on for a cooking run, some provision for charging the kettles must be incorporated. The best type of charging door would be a single door placed in one side and hinged to swing upward out of the way. Ease of



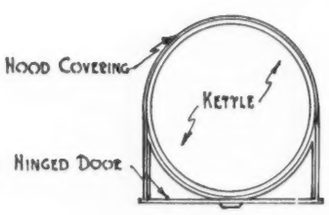
This sketch shows ventilators installed without hoods or ducts, but directly above the cooking kettles. Steam rising to the ceiling is out of the eyes of workmen and is easily pulled out of the room by the ventilators. Dampers are advised so that the ventilator can be closed when cooking is stopped or too much air movement is encountered



ELEVATION



SECTION



SECTION THRU HOOD

The best type of hood is one which completely encloses the kettle permitting charging through a hinged door. If necessary four doors, one in each side, might be built. The hood connects directly with a ventilator through a stack

swing can be insured by counterbalancing the door as shown in the sketch.

Since the kettle is round the proper hood would be a round shape except on the side where the door is cut through. Just how this fitting is made is shown in the top view of the sketch.

For the amount of steam which must be exhausted, a 24-inch fan ventilator with a capacity of just under 4,000 cubic feet of air per minute or a 36-inch rotary ventilator with a similar capacity should be used. If a fan is used the blades should be aluminum to combat chemical action and the motor should be totally enclosed with the wiring run through water-tight pipes and joints.

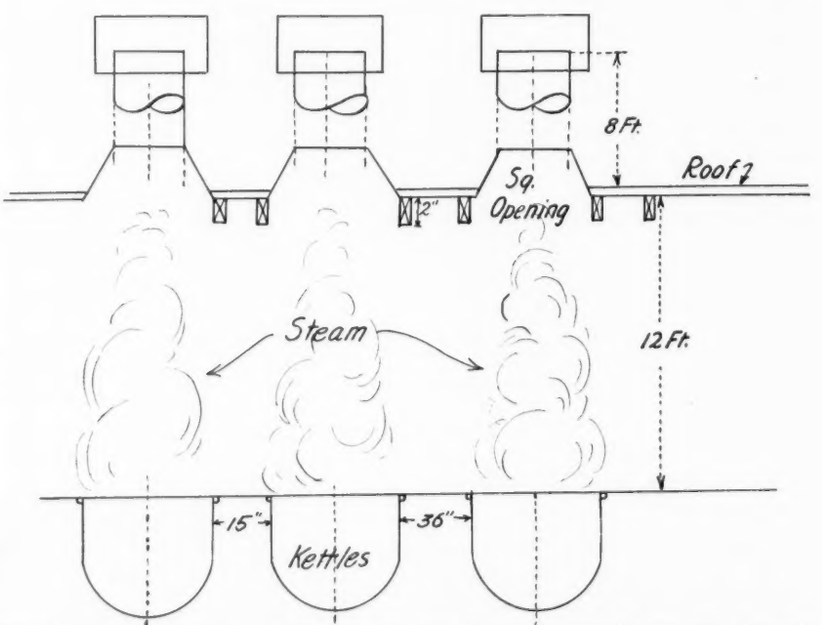
Another phase of the problem centers around the necessary access which must be had to the kettles. If it is necessary to charge and work from all four sides of the kettle, a square hood with rounded lips to fit over the kettle can be worked out so that all four sides can be equipped with hinged doors. Such a system should be more practical than a hood which can be raised by telescoping over the duct to the ventilator.

If the owner desires to reduce the installation cost and eliminate hoods of the type described, the cheapest installation will be to place three ventilators directly over the kettles without any stacks or hoods.

Trouble with this system is likely to arise from condensation on the under side of the roof, but the condensation should not increase to a point where there is dripping excepting in very cold weather and perhaps not even then.

While at first thought an installation with stacks and hoods suspended perhaps three feet above the kettles would seem logical, we should remember that any existing cross currents of air blowing over the kettle tops will blow steam outside the hoods and defeat the basic idea behind the use of hoods and stacks. By omitting the hoods this steam can rise to the ceiling, away from the kettle and be exhausted through the ventilators.

It is well to bear in mind that the type of installation—complete hooding or no hoods—depends on



The simplest type of installation would look like this—ventilators cut through the roof, no stacks or hoods, and no control over the ventilator. This was the original suggestion of the contractor and was vetoed in favor of a somewhat more complicated, but more efficient, system

two factors; first how much money the owner will spend; and second, just how nearly perfect must be the results the owner wishes. In addition, where the ventilators are simply cut through the roof, complete hooding can be added later without having to scrap any metal fabrication which cannot be used.

Complete hooding, whether a fan ventilator or a rotary ventilator is used will operate satisfactorily regardless of conditions existing inside the building. Open ventilators, on the other hand, will be defeated or reduced in efficiency if there are ventilation fans or ventilators already operating.

The sketches show dampers in the ventilator bases. The purpose of the dampers is to provide means of closing off the ventilator when there is no cooking going on, or at times when the exhaust of a full open ventilator is too great for the immediate needs of the workmen.

The sketches also show square bases for the ventilator heads, a feature which should be of value in collecting condensation and letting the moisture run down outside the roof curb. If the base is waterproofed to the curb holes should be cut through the base below the top of the curb so that water can run out on the roof.

Just how satisfactory ventilators can be as compared with roof monitors has been proved numberless times in industry where monitors have made control of inside conditions impossible. Wind blowing through the louvres of a monitor frequently create a blanket of cold air just below the roof line through which rising steam cannot penetrate. This defeats the purpose of the monitor.

The problem raised by this installation is one frequently encountered in industrial ventilation. Many industries are faced with the necessity for removing steam and vapors, yet cannot afford or do not want to go to the expense of installing fan and duct systems. The only practical solution to these problems, then, is gravity ventilators either connected to hoods or cut free through the roof. The sheet metal contractor who can visualize this need of industry and who can competently design systems to overcome the problems should be able to establish a profitable line of effort.

Tailor Made Ducts—[Continued from page 16]

cleats on the short side as it would be impossible to get them in on the wider dimension. These items must be remembered by the cutter.

There are approximately 43 fittings on the trunk line system. There are, however, only about 29 patterns to cut as one pattern will make several fitting in some cases. The patterns will require an average of 20 minutes each in the cutting. They are made directly on the sheet metal and when complete are ready for the brake or the turning machine.

We have 43 fittings at 20 minutes each or 14½ hours for the cutter. We estimate 3 hours for going to the job and getting the dimensions. It will take a man and helper 3 hours on the brake, and 4 hours to assemble the ducts and solder them off. A man and helper will erect the pipe at the job in 8 hours, and the apprentice spent two hours in getting out the drive cleats. Thus we have 19 hours for one man and 15 hours for a man and helper. At $1.25 an hour for the mechanic and 75c for the help we have a total of $53.75 for the labor. Our material is 330 pounds of galvanized iron including scrap at 5c equals $16.50. Ten pounds of solder at 30c is $3.00 and we have the sum of $73.25. This sum divided by 330 is equal to approximately .22 or 22c per pound. This does not include profit, overhead, cartage, freight, etc., but with these items added the per pound basis would still be miles from 70c per pound.

If this system were installed with the conventional factory made pipe and fittings, the price erected might be a little cheaper. There is no reason to believe that the "tailor made" trunk line system if cut and erected by mechanics who know their work will cost more than 25% in excess of factory made pipe and fittings.

Manufacturers of Products Shown in "Ten Best Prospects" Sales Plan

Fig. 1—International Nickel Co., Inc., New York, N. Y.
Fig. 2—Harrington & King Perforating Co., Chicago, Ill.
Fig. 3—The Floyd-Wells Co., Royersford, Pa.
Fig. 4—H. J. Somers, Inc., Detroit, Mich.
Fig. 5—Minneapolis-Honeywell Mfg. Co., Minneapolis, Minn.
Fig. 6—Lewis Air Conditioners, Inc., Minneapolis, Minn.
Fig. 7—Milcor Steel Co., Milwaukee, Wis.
Fig. 8—Berger Brothers Co., Philadelphia, Pa.
Fig. 9—Waterman & Waterbury Co., Minneapolis, Minn.
Fig. 10—The Heetrozone Co., Minneapolis, Minn.
Fig. 11—Warm Air Furnace Fan Co., Cleveland, Ohio.
Fig. 12—Beck Engineering Combustion Company, St. Louis, Mo.
Fig. 13—Skuttle Humidifier Co., Dowagiac, Mich.
Fig. 14—Forct-Air Co., Rockford, Ill.
Fig. 15—Meier Electric & Machine Co., Indianapolis, Ind.

DISTRIBUTORS news

The Problem of Foreign Steel

THE National Association of Flat Rolled Steel Manufacturers calls the sheet metal industry's attention to a condition which has already gone beyond the bounds of competitive control and which, if permitted to continue, will bring disaster to the entire metal industry.

That situation is the increased dumping of cheap foreign sheet metal in the United States.

The association has petitioned the American government to investigate the situation and act immediately. Here is the situation as it exists right now.

Never in the history of the steel industry have such demoralizing prices been made as in the reckless dumping of foreign steel in the United States today; cargoes of wire dumped into the heart of Chicago; bars into Detroit; wire, bars, shapes, plates, strips and sheets dumped along our entire seaboard, at prices which—with duty paid—are ten to twenty-five dollars per ton less than American producers can name.

When England, the bulwark of free trade, finds it necessary to boost her metal tariff—not, as some would have us believe, in retaliation to the American tariff policy, but actually to save her steel industry from being closed down tight by the influx of cheap Continental steel—it is in order that the United States take heed and act at once.

France, to protect her home markets (although dumping in other countries), is virtually embargoing steel by a system of license arrangements which limits almost to the zero point the tonnage which can be imported from other countries. According to the last report, the United States is limited to eighty tons of sheets per month.

The gist of the whole deplorable affair is that the principal steel works of Belgium have turned their plants into public utilities for providing gas, electricity and power to the more populous districts of that country according to quotas arranged among themselves.

This gives them a tremendous advantage in selling cheap steel. Then came the depreciation of the pound sterling and the increased British duty. This action struck consternation to the hearts of the steelmakers in Belgium, France, Luxemburg and Germany, because England was their most important market.

However, the Belgian steel producers, driven by the necessity of their municipal contracts to operate, must dispose of their steel. Possibly hoping that the gold standard would be restored and the duty eliminated, they continued delivered sterling prices only slightly higher than those they had accepted before, and absorbed both the 33 1/3 per cent duty and the 25 per cent depreciation in pound sterling.

The French and German steelmakers were compelled to follow suit.

On top of this, wages were reduced in Belgium and common labor receives approximately 75c a day; rollers $1.75 to $2.25 a day. Only slightly higher wage rates apply in France and Germany.

In the two latter countries they have some assistance from an export bounty, which averages 10 to 30 per cent. This bounty is paid at the expense of the domestic client who pays higher prices for equivalent product. It is not, as is commonly understood, a government refund but a pool made up by manufacturers. All Belgian-Luxemburg steel is sold through a syndicate but there is no information on any bounty on exports, their municipal contracts for gas, electricity and power evidently take care of that.

In addition to the above, unbelievably low ship rates are obtained to all foreign countries. As low as $3 per ton applies from Antwerp to the United States and it is more than probable that there is a rebate beyond these published rates.

European steelmakers have depended to a very great extent on export markets to run their plants. Now that these markets have been closed to them, or their purchases restricted by one reason or another, they are dumping their cheap products in the United States.

The term "cheap products" is used advisedly. It is cheap Bessemer steel, usually quoted $5 a ton lower than what is termed "good open-hearth steel" by the makers themselves. It is a cheap galvanized product. Samples of a well-known brand made in Belgium averaged eight-tenths of an ounce of zinc coating per square foot. It is so cheap in price that if all the labor charges were eliminated from the cost of galvanizing these sheets, American producers could not compete.

The absurdity of selling galvanized sheets at one pound sterling per ton, or 16c per hundredweight more than the price of black sheets, is painfully obvious even though such sheets carry but eight-tenths of an ounce of zinc coating per square foot.

Estimating 30 man-hours of labor to the production of a ton of the heavier grades of finished steel, at the average wage now applying in the American steel industry, one can readily compute from the prices quoted on foreign steel delivered along our seaboard that if all labor charges were eliminated from the cost to American steel producers, they could not compete, with the freight rates now existing from the mills to the American seaboard.

The question of protecting American steel interests is no longer debatable if we keep in mind that every ton of foreign steel imported into the United States means the loss of approximately four days' work to some steel laborer. In addition it means a loss by the railroads and their employees of the transportation of four to five tons of raw material necessary for the production of one ton of finished steel, together with a proportionate loss to all industries, utilities and labor serving the steel industry.

N. A. S. M. D. Overhead Expense Report

AS overhead expenses have played so important a part in management, a Preliminary Overhead Expense Report was issued in March of the hardware wholesalers and sheet metal houses who had reported their overhead expense figures up to that time for 1931.

One of the interesting features of that Report was the manner in which overhead expenses are affected by volume. Taking 1929 as a basis 100 per cent with a 17 per cent decrease in 1930, brought the figure for that year down to 83 percent. A further decrease of 22 per cent in 1931 brought the volume of sales down to 61 per cent. Overhead expenses in 1929 were 19.96 of sales; in 1930 22.19 per cent, and as a result of continued decreased volume the expenses rose in 1931 to 26.08 per cent. These figures included 6 per cent on capital and surplus employed.

At our meeting last year in Pittsburgh, those present indicated the manner in which expenses had been reduced, and many of our members used to advantage the "Twenty-Six Ways of Reducing Expenses" issued by our office. Through correspondence and contact with our members it is my belief that expenses have been reduced to near a minimum and that distributors are now in a position to take advantage as never before of any increase in volume of sales which for several months have been dragging near the bottom.

In analyzing the overhead expense figures of six exclusive sheet metal distributors, it is well to note that the average overhead expenses of these six houses is 24.65 per cent of sales, which, however, covers actual expenses and does not include interest on capital and surplus employed.

Attention is called to the expense of trucking. This expense last year ranged from .99 to 2.41 per cent with a general average for the six exclusive sheet metal houses reporting of 1.48 per cent of sales. Investigations indicate that many houses are making free delivery only within the city in which located.

As a further result of the investigations we have made of this subject, we find a vast difference in the manner of keeping records of this vital cost of doing business.

Free truck delivery has increased so gradually that all factors entering into the operation of trucks, I am afraid, have not been taken into consideration. Some of these items are:

Interest on money invested in trucks.
Gasoline.
Oil.
Registration.
Drivers' wages.
Tires.
Repairs.
Depreciation.
Insurance (fire, theft and liability).
Garage (rent, heat, light, water, mechanics).

Another item which should receive careful consideration is that of losses from bad debts. The Report of eight exclusive sheet metal distributors for the year 1930 showed a general average loss from bad debts of .65 per cent. The bad debt losses of the six reporting houses for last year ranged from .28 to 2.64 with an average of 1.16 which is a very decided increase.

In this connection, effective work is being done by our Credit Bureau, and this service is at the disposal of members without any additional charge of any nature. When you take into consideration that the total amount of all accounts referred to us during the year is over $350,000, and that according to our records 65 per cent of these accounts are paid direct to our members as a result of our efforts, you can understand that this activity of our Association should not be overlooked.

The compensation of salesmen is another item of expense which has been difficult to handle, but the figures show that this has been brought more nearer into line with present conditions.

Items 9 and 10 of our "Statement of Expenses" cover catalogs, circulars, donations, subscriptions, house salesmen's and traveling salesmen's salaries and expenses, which according to the report of six houses amounts to 6.07. The average salesmen's remuneration and expenses of these six houses for last year was 5.20.

The six houses, as you will notice, show an average turnover for last year of 3.09. This compares with 4.28 in 1930.

As a result of current conditions many of our members are giving increased attention to the problem of small, unprofitable orders.

While our members realize that it is the distributors' function to render service, they nevertheless feel that the cost of servicing small buyers who make only occasional purchases in extremely small quantities is excessive and unduly inflates their overhead expense. It is also realized that the cost of handling small orders as well as orders for numerous small quantities frequently does not compensate for the service.

The thought has been expressed that "hand to mouth" buying and the margin realized makes it absolutely necessary for distributors' prices to be based on small orders and the quantity buyer rewarded for quantity purchases. This plan has been in force in a number of districts on sheets and might be adopted in all territories and on other lines and items to advantage.

An analysis of the orders you receive should be helpful, and while it is realized that orders of any size are acceptable under present conditions especially from those who pay their bills promptly, it would seem that it is well worth while to give this subject consideration.

National Ass'n of Sheet Metal Distributors Meeting

Tuesday afternoon, October 18, in the Marlborough-Blenheim Hotel in Atlantic City, has been set as the time for the next meeting of the National Association of Sheet Metal Distributors.

This announcement was made by Secretary George A. Fernley, who is also Secretary-Treasurer of the National Hardware Association, Philadelphia. The sheet metal distributors will meet, as is customary, concurrently with the annual convention of the Hardware Association, which is October 17th and 18th.

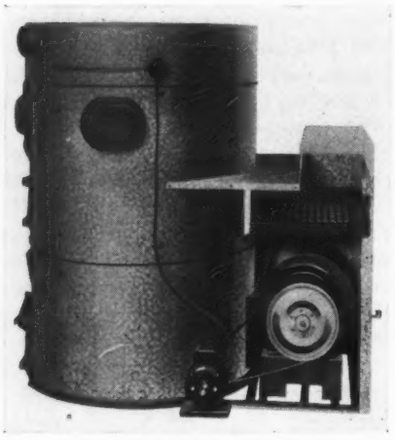
The Distributors News section is open to all jobbers or distributors of sheet metal or heating equipment for a discussion of the problems of their business. Letters, addresses and reports of meetings are solicited. Make the section—your section.

New PRODUCTS

New Popular Priced Conditioning Furnace

A new furnace, filter and blower matched unit, complete with controls and designed to sell for a popular price is announced by the Fox Furnace Company, Elyria, Ohio. The new furnace will be sold as the series 10 Sunbeam Air Conditioning Unit.

The furnace used is the Sunbeam No. 1000 cast iron unit with a one-piece radiator and with a feed and ash pit section that extend through the front. Units range from 80,000 B.t.u. to 157,000 B.t.u. register capacity with



coal. Blowers will range from 865 C.F.M. to 2122 C.F.M. at return air temperature. The units will have two or three filter sections according to size.

This new unit is designed especially for the owner of a small or moderately priced home. All equipment is of standard manufacture, so arranged that the complete system requires a minimum of space and to operate with a minimum of attention.

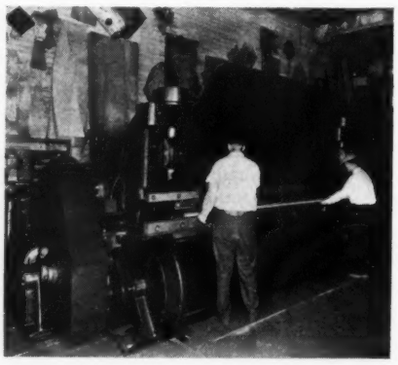
A feature is the ease with which the unit can be converted from coal to oil burning, with the necessary engineering changes already provided for.

◆

New Rafter Press-Brake

The new Rafter Press-Brake built by Farrel-Birmingham Company, Inc., of Ansonia, Conn., combines, with other distinctive features, welded construction of its unusually deep ram and bed.

The bed is made of rolled steel plate, welded into a heavy, rugged girder section. The gear casings and housings for eccentric and gear shaft bearings are welded integrally with the bed. All welded steel parts are carefully annealed and normalized after welding and before machining.



Bearing housings are bored to jigs to assure perfect alignment and to provide for interchangeability.

The ram is a solid rolled steel plate. Adjusting screw housings, guide bosses, etc., are formed by welding and the ram is annealed and normalized the same as the bed. There is no driving mechanism on the upper part of the machine; it is all attached to or contained within the bed.

In operation the ram pulls from below instead of pushing from above. Power is transmitted from the driving motor to the flywheel on the drive shaft through multiple "V" belt and friction clutch. The base and the ram are the only two major members of the brake. The machine is self-contained, being entirely mounted on the heavy, rugged base.

These brakes are built in a variety of sizes and those most commonly used are carried in stock for prompt shipment.

◆

New Induced Draft Blower

A new unit to be attached to the furnace flue and used to provide mechanical draft by furnishing the air necessary for good combustion is announced. The unit provides a vacuum in the combustion, smoke and radiator sections and so draws air through the fire bed from the ash pit.

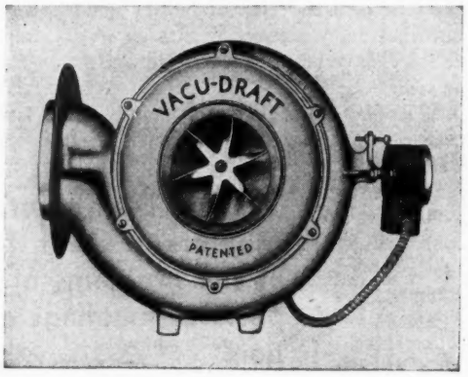
The unit consists of a centrifugal fan mounted in a specially designed aluminum casing and operated by a motor which is controlled by a thermostat. The unit can be attached to the brickwork of the chimney without drilling any holes.

In addition to controlling the draft the unit will also draw out through the fire bed all fine ash, dust and coal gases. The smoke pipe is connected directly into the fan while the fan replaces the pipe in the thimble.

The fan is operated by a thermostat mounted to receive heat by conduction from the fan housing and by convection from surrounding air. Another feature claimed is the pulling in of sufficient secondary air above the fire to create complete combustion of all gases.

Some very interesting tests have been made on the unit's operation. Information on these tests can be had from the manufacturer.

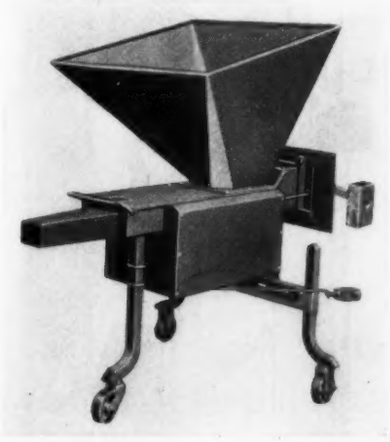
The unit is manufactured by the Muncie Gear Company, Muncie, Indiana and is being marketed under the name—Vacu-Draft.



New Furnace Stoker

A new furnace stoker, featuring a minimum of installation requirements and designed to sell at a low price, is announced by the Auto-Home Stoker Corp., 1731 South Michigan Ave., Chicago.

The stoker incorporates a number of features which are used for the first time or in a stoker of this price class. The general design specifies a unit which is mounted on adjustable legs and wheels so that the unit can be moved to the coal room where the hopper is filled. This hopper is large



enough to hold a fuel supply sufficient for from 36 to 48 hours of operation, depending on the weather.

From the hopper a measured amount of fuel is carried into the combustion chamber by a conveyor which deposits the fuel over the top of the fuel bed. The conveyor is set to place about six pounds of fuel in the chamber at one loading so that there is always a thin layer of green fuel above the hot fire.

An arm on which is suspended a fire brick projects into the chamber. The brick rests on the fuel bed and as the fuel is consumed the height of the bed drops as does the brick. When the bed lowers to a set depth the lowered arm sets the mechanism in operation for a new supply.

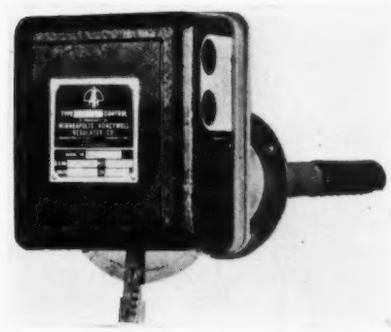
A ratchet arm shakes the grates lightly during the firing cycle.

Full information and details of operation and installation are contained in a handsome booklet which may be obtained from the company. Details of the dealer franchise may also be obtained.

◆

New Controls Available

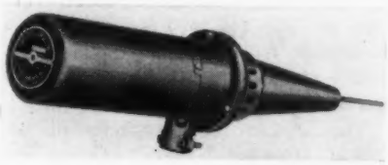
Among the improved developments in the automatic control field are a number of new instruments and devices developed by Minneapolis-Honeywell engineers to cope with



present day problems in temperature, humidity, and refrigeration control fields.

The new Program Furnace Control, for automatic warm-air furnace applications provides complete control of furnace fan operation and source of heat. It coordinates fan action with heat source and furnace temperature to meet room thermostat demands in winter and also provides for operation of the furnace fan in cooling during the summer months and prevents the operation of the gas valve or damper motor while the device is set for summer cooling. Type L 30-1 is used to control furnace fan and series 10 gas valve or relay, while Type L 30-2 controls a series 20 damper motor.

The new Minneapolis-Honeywell Protectoglow provides instant protection against the escape of unburned gas or oil in the event of flame or pilot failure. Entirely electric and without moving parts, the Protectoglow is not dependent upon tempera-



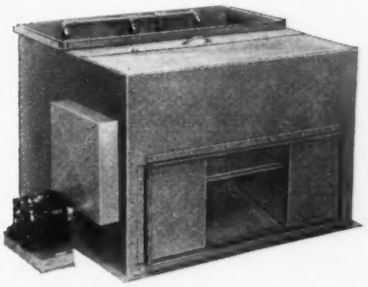
ture and is absolutely reliable. The heart of the device is the Protectoglow tube which acts as an electrical relay and is capable of operating at the command of an exceedingly minute electrical current passed through the flame itself. Should the flame fail, the circuit through the flame is broken, instantly shutting off the gas or oil flow. In the absence of pilot flame the Protectoglow will not allow the burner to start although it may be used in place of the pilot or safety device.

◆

New Air Conditioner

A new unit air conditioner which contains in a single housing a blower, filter and washer is announced by the Brundage Company, Kalamazoo, Michigan.

The new units will be furnished in capacities ranging from 600 C.F.M. to 3,600 C.F.M. Filters are specially treated steel wool. The washer section consists of spray nozzles throwing a mist into the air stream, necessary piping, a solenoid valve, pressure indicating gauge, a hand valve to shut



off the water and a strainer. Motors for the various sizes range from ¼ to ¾ horsepower.

A feature claimed is the compactness of the housings which average about 12 square feet of floor space required.

Leaflets describing all details of the new units have been prepared and may be obtained by writing the company.

◆

New Oil Burning Cabinet Heater

A complete line of radiant and circulating type cabinet heaters are now in full production and ready for immediate shipment, according to Motor Wheel Corporation, Lansing, Michi-

gan. There are two radiant models and three circulating type units available to handle small spaces up to 6,000 cubic feet, average construction.

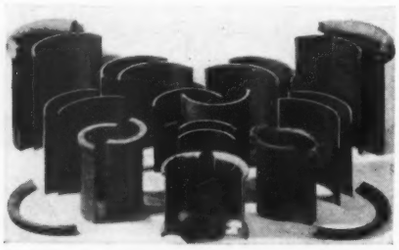
Two of the circulating type heaters have been attractively finished for installation in the living rooms of bungalows, homes, and other places where their porcelain enamel, walnut grain, should be appealing. The remaining circulating unit has been finished in a sturdy fireproof black for general utility. One radiant model is constructed of uniform blue steel; the other of Wellsville polished radiating steel.

New Bearing Announced

A new bearing made from synthetic resin, similar to Bakelite, and with textile material as the base in which the strong belting textile material reinforces the resinoid, which completely fills and saturates it, is announced. The composite material is then subjected to great heat and pressure. At approximately one ton pressure per square inch and 340° F., the product sets.

The physical characteristics are entirely changed and the bearing is no longer fusible or soluble. It cannot be re-softened by heat, will not absorb water or oil and is resistant to most acids. It is, however, attacked by hot caustic alkalies.

Pressure and heat are applied through dies which form the bearing to the exact size and type required,



at the same time setting the material. The material is extremely hard and will show a Brinell reading of about 30-40 and a Sclerescope reading of 70-80. These bearings are said to be particularly satisfactory where it is easier to apply water as a lubricant than oil though they will operate satisfactorily with oil.

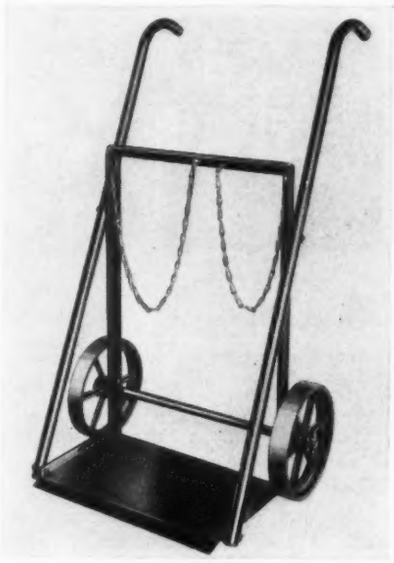
The new bearing is known as the "Ryertex" bearing and is being sold by Joseph T. Ryerson & Son, Inc.

◆

Improved Truck for Welding Equipment

The Linde Air Products Company, 30 East 42nd Street, New York, N. Y., has introduced a new cylinder truck known as the No. 5 Cylinder Truck. This truck greatly increases the ease and convenience of moving the welding or cutting outfit from place to place in the shop or yard and of transporting the outfit to outside jobs. It insures a firm support for the oxygen and acetylene cylinders, eliminating any possibility of overturning them and breaking the regulators or gauges.

The frame of the new truck is made of angle iron welded into a permanently rigid unit. A beveled steel plate welded to the frame forms the cylinder platform. Cylinders are held firmly in position by means of chains which are adjustable to accommodate



cylinders of different sizes. The truck has 12-in. cast iron wheels with 2-in. tires. The overall size is 48 in. high by 30 in. wide. Its weight is only 80 lbs. It is attractively finished with a durable, rust preventing black enamel which will not readily chip or peel.

◆

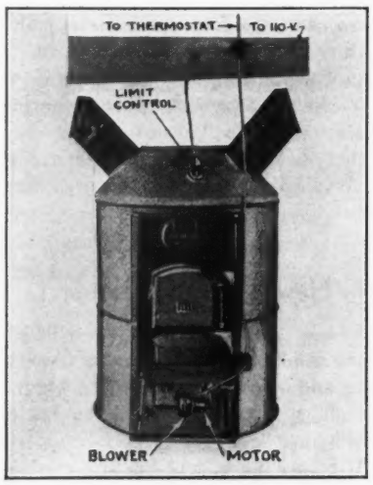
Announce New Coal Burner

A new automatic coal burner, designed for mounting on the ash pit door without disturbing existing grates or other parts of the furnace is announced.

The unit consists of a fan direct connected to the motor both mounted on the ash pit door and blowing air into the ash pit section. The fan is controlled from the room thermostat which operates the motor in place of the checks and drafts.

The blower has a capacity of 100 C.F.M. (free air delivery). Use of the blower eliminates all chains, pulleys, and manual operation.

Full details are available from the Universal Blower Company, Birmingham, Michigan, manufacturers.

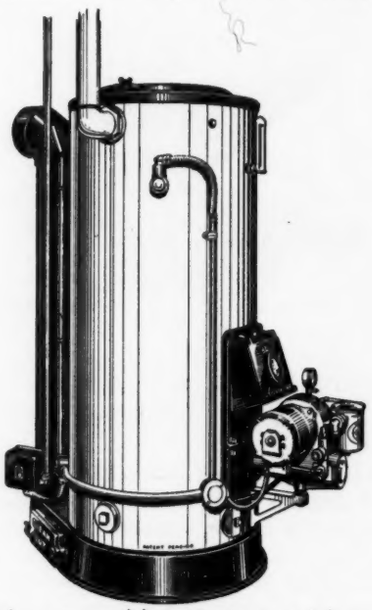


Oil Fired Hot Water Heater

A new oil-fired, hot water, storage heater, said to show remarkable savings in operation costs over electric, gas and coal fired heaters is being manufactured by the Heil Company, Milwaukee, Wisconsin.

The heater consists of a specially designed, down draft, tubular boiler fired with a Heil oil burner, of the gun type. The heater is heavily insulated top, bottom and circumference.

Because of the large capacity the unit is said to be especially suitable for estates, garages, clubs, apartments, restaurants or any commercial estab-



lishment requiring constant and large quantities of hot water.

A leaflet showing the unit in detail and describing construction and operation has been prepared and will be mailed to any dealer wishing a copy.

◆

New Conversion Burner

A new gas conversion burner, applicable to all types of heaters and based upon a new combustion principle, is announced by the Lee B. Mettler Company, 406 South Main Street, Los Angeles, Cal.

The burner is designed to fit into ash pit of the furnace with a bricked-in firing chamber replacing the grates and bare combustion surfaces.

The firing principle is described as "Entrained Combustion." The unit is built on the multi-jet principle; that is, multiple mixing chambers to each burner and multiple gas jets to each mixing chamber. The principle is said to give better combustion close to the end of the burners.

The unit is manufactured complete with gas valve, safety switch, air regulator, refractory mixing block, gas manifold and damper.

THE J. M. & L. A.
OSBORN Co
DETROIT—CLEVELAND—BUFFALO

"Everything Used in Sheet Metal Work"

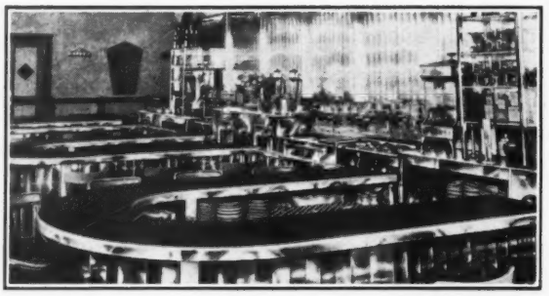
OUR SLOGAN FOR MANY YEARS

THIS slogan is as good as it is old. It briefly states the kind of things we manufacture—stock—and sell. But on this particular occasion we want to EMPHASIZE the fact that we SPECIALIZE in things SHEET METAL WORKERS USE. Also that we maintain three warehouse stocks for their convenience. In these stocks the trade will find products our co-operating manufacturers advertise.

Ask for price and information
Maybe we can help you pick the best to buy
WE'LL TRY!

MANUFACTURERS
DISTRIBUTORS
"Everything Used in Sheet Metal Work"

THERE'S PROFIT HERE



Sandwich Shop of ENDURO Stainless Steel

ENDURO, Republic's Perfected Stainless Steel, opens the way for new sheet metal business. Rust-free, immune to fruit juices and most acids and chemicals, it is perfectly applicable for drainboards, sinks, counters, table tops, vats, cooking utensils, architectural trim and decoration, ventilators, grilles, smoke pipe and hundreds of other uses.

Write today for your copy of "New Profits from a New Metal," describing this modern metal and its fabrication. As distributors we offer complete and prompt service.

Superior Galvannealed PATENTED PROCESS

Superior GALVANNEALED Sheet Steel is the result of constant research and experiment, conducted over a period of years to obtain a sheet that would meet satisfactorily the requirements of sheet metal contractors — a sheet to which paints and lacquers would adhere most satisfactorily and one that would resist successfully severe formations or temperature changes.

Outstanding is the ability of GALVANNEALED Sheet Steel to form under the most difficult of operations without injury to the protective, highly rust resisting coating.

THE SUPERIOR SHEET STEEL CO.
CANTON OHIO

THE J. M. & L. A.
OSBORN CO
DETROIT—CLEVELAND—BUFFALO

CANTON STEEL CEILINGS

In remodeling work, one of the greatest opportunities offered you for immediate, profitable business is CANTON Steel Ceilings. Canton Steel Ceilings can be built in without tearing out the old ceiling at a price that is attracting business.

Write immediately for dealer literature and newspaper advertising which will promote the sale of CANTON Steel Ceilings.

CANTON STEEL CEILING CO.
Canton Ohio

in Small Home Construction

Let Osborn Co.

SOLVE YOUR PROBLEM WITH THAT *Balky Chimney* AND THAT *Ventilating Job* WITH A

UNO

Sure as sunrise . . . No oiling . . . No greasing . . . Wind driven . . . Powerful suction . . . Electric Welded . . . Silent . . . No down drafts . . . Rain proof.

UNO VENTILATOR CO.
CLIFTONDALE MASSACHUSETTS

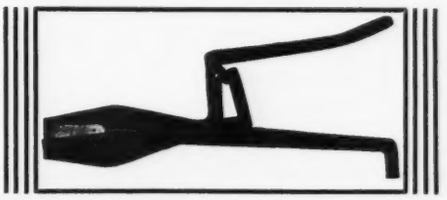
"BB" QUALITY

Quaker City Mitre

OTHER "BB" QUALITY PRODUCTS

Gutter Hangers . . . Conductor Fasteners . . . End Pieces and Caps . . . Conductor Heads . . . Ornamental Straps . . . Ventilators . . . etc.

In FURNACE WORK *the* VIKING SHINES



THE Heating Season is On!! Heating Contractors are radiating optimism, all because furnace work is keeping them busy. Customers have held off owing to conditions but the furnaces are now being made ready to start a season of heating work, so no more can they hold off. Cold weather will be along any day at all. Being able to offer speedy service right now is going to help a lot of heating contractors to more business. In this connection, let Viking Shears do their part. Take them right to the job. They will speed up all of your cutting and trimming work. The Viking Portable Bench Shear will save you lots of time and help you do the most work in the shortest time possible.

Send for Particulars

VIKING SHEAR CO., Erie, Pa.

MANUFACTURERS
DISTRIBUTORS
"Everything Used in Sheet Metal Work"

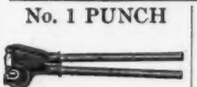
DIECKMANN
ELBOWS *and* SHOES

are manufactured to conform to the Industry's Simplified Practice Recommendation Number 29 as issued by the U. S. Department of Commerce.

The FERDINAND DIECKMANN Co.
P. O. Station B
CINCINNATI OHIO

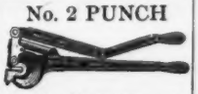
WHITNEY LEVER PUNCHES

No. 1 PUNCH



Length, 34 inches. Capacity ⅝-inch hole through ¼-inch iron. Punches and dies in sizes from ⅛ to ⅝ by 64ths.

No. 2 PUNCH

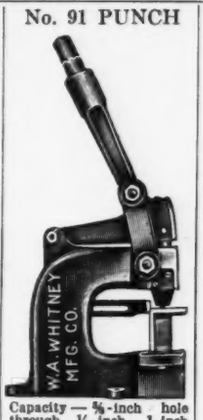


Length, 23 inches. Capacity ⅜-inch hole through ¼-inch iron. Punches and dies in sizes, ⅜-inch to ½-inch by 64ths.

CHANNEL IRON PUNCH

Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity, ⅜-inch hole through ¼-inch iron.

No. 91 PUNCH



Capacity — ⅝-inch hole through ¼-inch, 1-inch hole through ⅜-inch and 2-inch hole through ¼-inch iron. Depth throat 5-inches. Weight 82 lbs.

We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber

No. 4B PUNCH

Length—8½ inches. Capacity—¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—⅛" to ⅝" by 64ths.

No. 6 PUNCH

Length—26½ inches. Capacity ¼-inch hole through ⅜-inch iron; especially adapted for button punching or templet work.

W. A. WHITNEY MFG. COMPANY
636 RACE STREET, ROCKFORD, ILL.

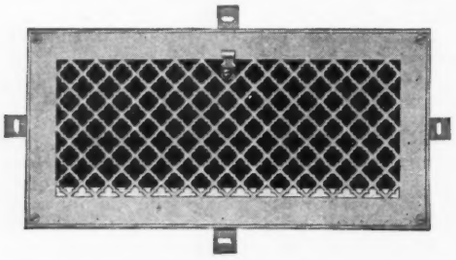
GIVE YOURSELF A BREAK!

STANDARDIZE ON H & C

On finer quality, better design and superior construction at standard prices, H & C has built the most popular line of registers in the world. And this fact is easy to understand, for most installers realize that in addition to the world of satisfaction derived from handling the best, it also pays greater dividends.

Standardize on H & C. The line provides an unusually wide range of selection—the ideal registers for every type of installation.

Leading Jobbers Carry Complete Stocks

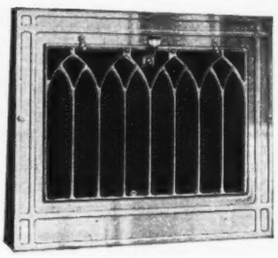


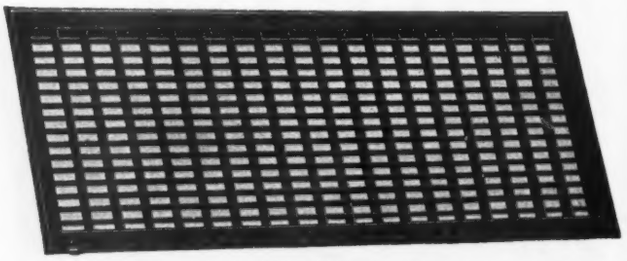
3 Pc. Air Conditioning Register No. 3331

Our entire air conditioning line including one and three piece sidewall and baseboard registers and return air intakes to match, is available in three very attractive grille designs, including the one shown here—a sufficiently wide choice to meet almost every taste.

No. 110
Baseboard Register
(Gravity Type)

Simple, dignified, beautiful, this register is deservedly the most popular baseboard register on the market. Two other H & C baseboard lines, however, in both one-piece and two-piece types, provide a wide range of selection.





No. 265 Cold Air Face

Particularly advantageous for single floor installation. Has large air capacity. Narrow mesh (11/16" x 17/16") prevents heel trouble. Offered in new No. 2 medium dark oak grain in addition to our lighter No. 1 oak, as well as all other standard finishes.

WROUGHT STEEL H&C WARM AIR REGISTERS

HART & COOLEY MFG. CO.

General Sales Offices, 61 W. Kinzie St., Chicago
New Britain, Conn., Corbin Ave. Philadelphia, Architects Bldg.
Boston, 75 Portland Street New York, 101 Park Ave.

Registers for all purposes. Also a complete line of perforated and cast ornamental grilles, furnace regulators, dampers, damper regulators, pulleys, chain, and the H & C Automatic Heat Control.

News Items . . . . . .

Furnace Plant Activity

The photograph shows new General Electric oil burning furnaces ready for shipment from the Company's Pittsfield plant. The furnaces shown in the photograph are

without their external jackets, inasmuch as this outer covering is not attached until the time of actual installation.

◆

Full Time Schedule Resumed

Odin Stove Mfg. Co., Erie, Pa., has resumed production on a full time schedule, reinstating large number of workers and bringing force up to regular quota.

◆

Booklet on Chrome Iron Alloys

The Rustless Iron Corporation of America, 122 East 42nd St., New York, makers of rustless chrome iron alloys, will mail to contractors an interesting booklet describing the composition and application of this new product.

Rustless iron, according to this booklet, is made from chrome ore by a patented process. The metal is said to be immune to rusting, tarnishing and corrosion. It is bright and lustrous and lighter, but stronger, than steel. The material can be obtained in varying degrees of hardness—it can be had soft, ductile and formable or hard enough to resist abrasion.

At present the material is available in a number of forms—among which are sheets.

◆

Will Move to Holland, Michigan

The Automatic Burner Company is making arrangements to move its plants in Chicago and in Galesburg, Ill., to Holland, Mich., where it will be possible to consolidate the two plants under one roof. The new plant will employ about 100 men and it will start operation some time in the fall. In making the change thirty families will move from Chicago and Galesburg to Holland, Mich.

◆

Air-Conditioning Show Proves Popular

Air conditioning has aroused public curiosity; 45,000 Chicagoans visited a 3-week show put on by 21 exhibitors of apparatus. Devices were grouped in 4 general classes: (1) filters, to remove dust and pollens; (2) humidifiers; (3) room coolers, either ice or mechanical; (4) weather control plants operating in connection with warm air furnaces. Room coolers using ice were numerous.

News Items . . . . . .

Lamneck Reorganization

Announcement is made of the organization of a new company—Lamneck Products, Inc.—succeeding The W. E. Lamneck Company.

The new company is now operating and will continue in the manufacture and sale of Lamneck Simplified Furnace Pipe and Fittings—Registers and Cold Air Faces—Stove Pipe and Fittings—Furnace Accessories and Supplies of all kinds.

In March, 1932, The W. E. Lamneck Company was placed in the hands of a receiver. By constructive management, the receiver, Mr. Perl S. Miller of Columbus, Ohio, succeeded in bringing about the formation of a new corporation—with executive personnel selected principally from the former company.

Executives of Lamneck Products, Inc., are as follows:

Paul L. Selby, President—Columbus attorney.

Charles J. Holub, Vice President and Factory Superintendent. Mr. Holub served with The W. E. Lamneck Co. from its inception.

R. B. Thompson, Secretary and Treasurer. Mr. Thompson served in similar capacity with The W. E. Lamneck Co., joining the organization in 1919.

Ralph M. Tremain, Credit Manager. Mr. Tremain joined The W. E. Lamneck Co. in 1917, and served continuously to the present.

J. C. Bostain, General Sales Manager. Mr. Bostain comes to the new company from The Williamson Heater Co., Cincinnati, Ohio.

The new company occupies the same four-story plant at 416-436 Dublin Ave., Columbus, Ohio, where a complete stock will be maintained for prompt service to the trade.

◆

National Ass'n. of Sheet Metal Distributors Meeting

Tuesday afternoon, October 18, in the Marlborough-Blenheim Hotel in Atlantic City, has been set as the time for the next meeting of the National Association of Sheet Metal Distributors.

This announcement was made by Secretary George A. Fernley, who is also Secretary-Treasurer of the National Hardware Association, Philadelphia. The sheet metal distributors will meet, as is customary, concurrently with the annual convention of the Hardware Association, which is October 17th and 18th.

◆

Put 250 Employees to Work

Excelsior Stove & Mfg. Co., Quincy, Ill., has resumed operations following curtailment for several months, reinstating about 250 men.

◆

Ventilation Equipment Manufacturer

Automatic Ventilator Co., Corunna, Mich., has been organized by F. A. Strawsine, Corunna, and associates, to manufacture ventilating equipment.

◆

Rebuild After Fire

Merrill-Usher Co., 5-7 Artic Street, Worcester, Mass., manufacturer of sheet metal products, tinners' tools, etc., plans rebuilding part of plant recently destroyed by fire. Loss about $30,000 with equipment.

CASH IN *now* ON AIR CONDITIONING

AT the first sign of cool weather your customers become interested, from a comfort and financial standpoint, in the condition of their heating plants. Last year's experiences suddenly become "nightmares" in the minds of some of these home-owners, who immediately become profitable prospects. These nightmares grow into decisions to replace the "old boy" with a new furnace capable of carrying on over a period of years—one that will not only have the necessary "innards" but that will also do a real job of air conditioning.

The need is for a furnace with the necessary requisites of modern day furnace construction, plus price and reputation, *plus* a single unit that will answer the air conditioning demand with 100% performance.

This picture puts the AKRON AIR BLAST dealer in on the ground floor.

The AKRON AIR BLAST meets every specification in a manner that will be forever pleasing to the home-owner and most pleasing from a profit and reputation-building standpoint to the dealer.

The MAY-FIEBEGER Co.
NEWARK OHIO

AKRON AIR BLAST

Do You Still Talk Quality?

These days when everybody is talking price, it is a good thing not to forget to talk quality. For, after all, buyers want a reliable heating installation, no matter what they pay. When you sell Moncrief Furnaces, you can give your customers the best there is at prices that will get the business and pay you a profit.

Send for particulars of the Moncrief proposition.

The Henry Furnace & Foundry Co.
3471 East 49th St. Cleveland, Ohio

Branches at
Pittsburgh, Pa., and Ashtabula, Ohio
Eastern Office
224 No. 23rd St., Philadelphia, Pa., E. L. Garner, Mgr.
Pacific Coast Representative
McPherson Furnace & Equipment Co., Seattle, Wash.

Distributors:

Chicago Furnace Supply Co., Chicago, Ill.
Moncrief Furnace Co., Indianapolis, Ind.
The F. H. Lawson Co., Cincinnati, Ohio.
Johnson Furnace Co., Kansas City, Mo.
E. A. Higgins Co., Omaha, Neb.
J. M. & L. A. Osborn Co., Buffalo, N. Y. and Detroit, Mich.
Geo. H. Cole Supply Co., Troy, N. Y.
W. H. Landers Co., Syracuse, N. Y.
Springfield Plumbing Supply Co., Springfield, Mass.
Sheet Metal Supply Co., Milwaukee, Wis.
Northern Metal & Mfg. Co., Green Bay, Wis.
Schrader-Easley Co., Memphis, Tenn.
Marshall-Wells Co., Duluth, Minn.
The Behler-Young Co., Grand Rapids, Mich.
Moncrief Heating Co., South Bend, Ind.
Moncrief Heating Co., Youngstown, Ohio.

MONCRIEF FURNACES

News Items . . . . . .

Ryerson Ninety Years Old

A most interesting booklet has been prepared and is being distributed by Joseph T. Ryerson & Son, Inc., of Chicago, depicting in story and picture form the ninety years of progress and service of the company.

Beginning as a one man, small business, in 1842, the story takes up the history of the firm and its progress through the years. Illustrations show the first quarters, then those at the time of the Chicago fire and last present warehouses and buildings.

The story relates how Mr. Ryerson's journey from Philadelphia, 900 miles, required nine days of hard travel by stage, boat and rail. Chicago, at that time, had only 6,000 inhabitants. Slowly the business was expanded, moving from larger quarters to still larger quarters, each move witnessing increased business and enlarged fields of service.

The Ryerson Chicago store occupied from 1853 until 1871

In 1871 the entire physical business was wiped out, but immediately a new location and new quarters were opened. In 1902 the firm bought its own land and erected a warehouse. Again, in 1914, an enlarged program brought warehouses and offices in several cities. Existing plants were purchased until today there are ten steel service plants.

The booklet gives a complete description of the firm's present facilities and shows photographs of various plants and stocks.

AMERICAN ARTISAN congratulates the firm on its splendid record and extends best wishes for continued progress and prosperity.

◆

New Distributors for Control Equipment

Barber-Colman Company of Rockford, Illinois, announces the appointment of two new distributors for their electrically operated temperature control equipment.

Olson Brothers, 2612 Leavenworth Avenue, Omaha, Nebraska, will cover all of Nebraska, western half of Iowa including Des Moines, northwest quarter of Missouri and the eastern half of Kansas.

Johnson Stoker Company, 407 State-Planters Building, Richmond, Virginia, will cover Maryland, the District of Columbia, Virginia, and North Carolina.

◆

New Metal Alloy Firm

National Metalloys Corp., Pittsburgh, has been organized by I. A. Simon, 1060 Morewood Avenue, and Leon Falk, Jr., 1217 Farmers' Bank Building, to manufacture metal alloy specialties.

News Items . . . . . .

Sheet Metal Shop on Wheels

John Goettl, of Mansfield, Ohio, long connected with the heating and sheet metal trades and for some time invalided, has designed a sheet metal shop which can be established in the average, small sized truck.

Mr. Goettl has prepared complete drawings of the shop, showing just where all supplies and equipment should be stored and giving complete plans for building the truck body or having it built.

The feature of the shop is that materials which must be used for the average small contract for sheet metal or furnace work can be carried in the truck. In addition, such equipment as hand tools and small brakes, shears, etc., are accounted for.

Mr. Goettl sells these plans. Readers who are interested in securing a set of plans can write AMERICAN ARTISAN for prices and information.

◆

Interesting Heating Development

A Columbus, Ohio, coal retailer informs the coal trade that he has contracted for 500 coal jets for the domestic burning of pulverized coal, and that he plans to make the installation of these jets in the early fall. He will furnish coal from his Columbus yard, where it is to be pulverized, and delivered in cloth sacks or tanks.

The coal jet in question is the product of a subsidiary of the Jeffries Manufacturing Company, of Columbus, and it is understood that the device will retail for about $400, with a $15 installation charge. The jet can be installed, it is said, in any domestic furnace. The equipment includes a tank with a capacity of 675 pounds of pulverized coal.

About 25 of the jets were operated in Columbus homes during the last winter. It is said that a Washington, D. C., retailer has placed an order for a thousand jets. The service will include the removal of the ash. It is claimed that the amount of fly ash has been reduced to a minimum.

◆

Company Resumes Operations

Reznor Mfg. Co., Mercer, Pa., manufacturer of stoves, parts, etc., has resumed production after curtailment for number of months, giving employment to about one-half normal working quota, which will be stepped up in near future.

◆

Range Water Heating System

A leaflet describing a water tank which can be installed in any coal or wood burning kitchen range and which will heat enough water to supply several room radiators has been prepared by Peter J. Born of 1042 Bloomfield Ave., Hoboken, New Jersey.

The unit consists of a water jacket which fits in the firebox without obstructing the combustion space. The jacket is connected to room radiators by a customary piping system with a return and operates on gravity flow.

The system is said to be well adapted to small houses or for apartment houses where there is no central heating system.

Here are a few reasons why you should be handling

THE ROAN

AUTOMATICALLY CONTROLLED FURNACE FAN

THE ROAN is the most successful furnace fan on the market today.

The Roan will increase the efficiency of any warm air plant in which it is installed.

The Roan reduces the temperature difference between the floors and ceiling.

The Roan banishes the Uncomfortable chill from the floors, corners, and far rooms of the home.

The Roan lowers the basement temperature.

The Roan forces the warm air within the shell of the furnace up into the rooms.

The Roan will increase the air circulation throughout the entire system.

The Roan is constantly working except when the fire is out.

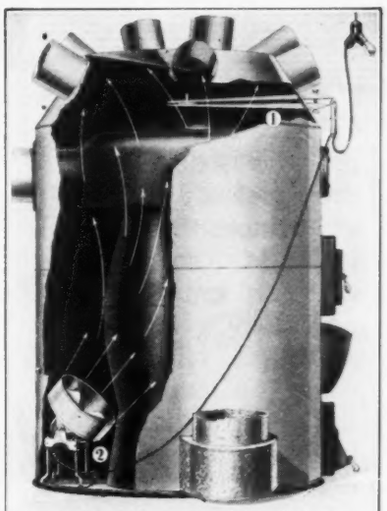
The Roan increases the humidity by pushing up the heavy humid air which is there when the water pan is kept filled.

The Roan eliminates forced firing and burnt out fire pots.

The Roan, to be installed, does not necessitate interruption of the heating service.

The Roan does not require reconstruction of the heating plant.

The speed of the fan is in direct proportion to the heat in the bonnet of the furnace—"The only fan made having this feature."



1 Showing installed position of Roan Automatic Fan Controller.
2 Showing installed position of Roan Fan Unit.

The power consumption is exceedingly low.

The Roan is absolutely guaranteed.

The Roan is priced so that the dealer enjoys a substantial profit.

» *Write for prices and Literature* «

ROAN MFG. CO., 1220 Washington Ave., Racine, Wisconsin

News Items . . . . . .

Establish New Distributors

The Automatic Products Company of Milwaukee, manufacturers of automatic controls for all types of heating and ventilating equipment, announce the opening of their export office at 15 Laight Street, New York City—to facilitate the handling of all foreign orders.

In connection with the expansion program of this company two new distributors have been appointed.; Fee and Stemwedel Inc., 221 West Chicago Avenue, Chicago, Illinois, are to be exclusive distributors for Northern Illinois and Northern Indiana; Fagan and Andrews, 181 West Michigan Street, Milwaukee, Wisconsin, are exclusive distributors for the Northwest territory including Wisconsin, northern Michigan, Minnesota, North and South Dakota, and Iowa.

The plant of this company is being considerably enlarged to handle the increased production schedule. In the very near future a complete line of automatic controls for air conditioning equipment will be announced.

◆

Gas Burner Catalogue

The new 1933 Sonner Gas Burner Catalog illustrating correct installation for all types of heating systems is now available. In it are listed the actual equivalent radiation capacities that each Sonner Burner will safely carry at all workable gas pressures, from 1 to 8 ounces of gas pressure and from 2½" to 14" of water pressure. Each illustration shows clearly the proper location and types of recommended automatic controls to be used for each specific type of heating systems. The data included for selecting the gas burner make it unnecessary to consult radiation charts and curves and engineers' hand books.

The following changes have been made in the new 1933 Sonner Heat Machine:

1—Telescoping adjustable draft box for primary and secondary air. This improvement aids particularly in warm air furnace installations by not having the draft box project too far out in front of the ash pit door.

2—The primary and secondary air door is arranged with positive rigid connection for use with the combination draft and damper controls.

3—The Sonner Automatic Pilot is also adjustable and may be placed on either side or at the center of the burner unit heads.

4—The baffle supports are now cast with openings to provide cross supports for the cementing in of the unused portion of the grate area.

5—The baffle itself is now self supporting.

6—Manual control brass lever valves are now provided as auxiliary equipment.

◆

To Manufacture Products

Style Metal Specialties, Inc., Brooklyn, has been organized by Paul Millman, 102 Taylor Street, Brooklyn, and Max Teitelbaum, 910 Prospect Avenue, Bronx, to manufacture metal products.

◆

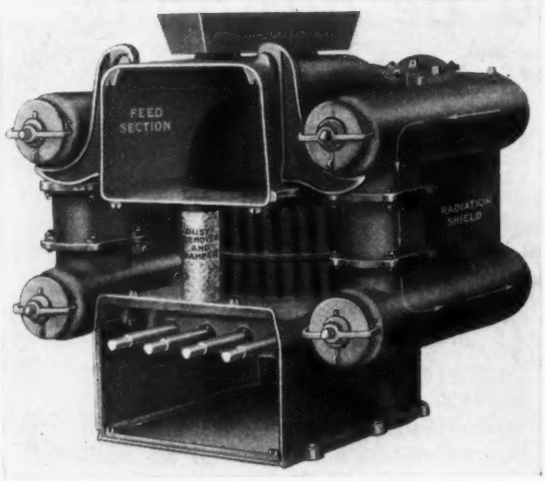
Organize New Company

Looney's Sheet Metal Works, Inc., 314 South Kenosha Street, Tulsa, Okla., has been organized by Harold W. Looney and associates, to manufacture sheet metal products.

The New BRN

THE heating man who is developing the greatest volume of business these days is selling something with an unusual appeal and a price in keeping with the times. If it's furnaces, the wise heating man is lining up with the new Andes BRN.

Here is a furnace that in five years has achieved a remarkable reputation for "delivering the goods." The BRN boasts unusual features that are most appealing, but



the outstanding feature is FUEL ECONOMY. That's what buyers of today are vitally interested in.

Most people today are looking for the "real buy," something that is reliable but with a low original cost and most important of all, economical to operate.

And that's what the BRN dealer can talk most about, *economy of operation.* Who can pass over the fact that the BRN gives off 20% more heat from the same amount of fuel, gives a better distribution of heat, proper humidity and is absolutely clean and tight?

Write us today. Let us tell you the whole BRN story.

ANDES
RANGE & FURNACE CORPORATION
GENEVA, NEW YORK

News Items . . . . . .

Death of Wm. E. Lamneck

Word has been received of the death in Columbus, Ohio, of William E. Lamneck, one of the active and long time members of the warm air heating industry.

Mr. Lamneck organized the W. E. Lamneck Company, manufacturer of furnace pipe and fittings in 1917.

Mr. Lamneck died as a result of a fractured skull suffered September 5 in the apartment of his brother Congressman A. P. Lamneck. Mr. Lamneck slipped in the bathroom of the apartment and in falling struck his head so severely that a skull fracture resulted.

He is survived by his widow, a son, four brothers and his father and mother.

◆

J. L. Skuttle Breaks into Print

J. L. Skuttle, long identified with the warm air heating industry and inventor of a number of products used in furnace work, sends us a clipping from the Mason City, Iowa, Globe-Gazette which describes the inventor's early struggles to develop his unit and his subsequent success.

Mr. Skuttle is probably best known for his humidifier which is now standard on a number of furnaces and which has been widely adopted by the trade. "The first humidifier," says Mr. Skuttle in the news item, "was a pretty crude affair. However, improvements have been made constantly, the latest being the application of the line trap which filters out grit and dirt. A screen has also been added for the same purpose. This trap also serves to keep lime out of the valve. A regulator which maintains a predetermined water level according to demands for moisture and temperature has also been added."

The article also describes some of the other products developed lately and details some of the interesting early experiences of the inventor.

◆

New Sales Chief

H. F. Harper, president of Motor Wheel Corporation, Lansing, announces the appointment of M. F. Cotes as sales director of the Corporation's Heater Division, manufacturing MW Oil-Burning Utilities.

The new merchandising executive has been a prominent figure in the oil-heat industry for a number of years, as president of the Draft-A-Justor Corporation, and more recently, since 1929, as president and active sales head of the Quaker Manufacturing Company, Chicago, makers of oil-burning space heaters.

In his new position, Mr. Cotes will control all merchandising activities of the Heater Division whose business is in automatic weather control units, boiler units for steam and hot-water heating, water heaters, ranges and other oil-burning apparatus.

◆

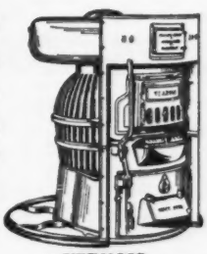
Distributer Sells Out

J. M. & L. A. Osborn Co., 64 Rapin Street, Buffalo, manufacturer and distributer of iron and steel products, has purchased the Buffalo division of Garley Steel Co., Inc., 50-54 Buell Avenue, with headquarters at Chicago.

The VERNOIS "A Better Product"

You
CAN MAKE MONEY
on this Line

THE VERNOIS Line is a line that merits your consideration today, if you are not already familiar with the profit possibilities of products of VERNOIS manufacture.



VERNOIS *Better Built* FURNACE

Now, during the early stages of the heating season, there is much business to be had, both in replacement work and new furnace installations. Furnaces do not last forever and each year a certain percentage are repaired and replaced, so that it is a matter of going after this business with a line that has the proper appeal as to mechanical construction, reputation and price.

VERNOIS *Gas* RANGE

The VERNOIS Line answers these qualifications so well that heating contractors are able to sell new jobs in many cases where only repair work has been considered by the homeowner.

The VERNOIS Gas Range and the VERNOIS Enameled Circulator are also products of the VERNOIS Line that have been instrumental in creating profits for many heating contractors.

VERNOIS *Enameled* CIRCULATOR

Write for literature descriptive of the VERNOIS Line. Become a booster of the "Line of Better Products."

MT. VERNON FURNACE & MFG. CO.
MT. VERNON ILLINOIS

Vernois

A NEW AND BETTER 3/8-INCH DAMPER REGULATOR

H & C Damper Regulator Sets, Cadmium finish, are now available in ⅜" as well as ¼" size. The ⅜" size has a third lug for secure fastening. Each set is furnished complete in one envelope with rivets, screws and a pair of combination (regular or splitter) bearings. Separate parts as ordered.

HART & COOLEY MFG. COMPANY 61 W. Kinzie St., Chicago

"YOU GET MORE BUSINESS"

Kester Solder is easier and quicker—the acid flux is in the solder. Kester Solder is pure—it is made of virgin metals, which insures a permanent perfect job that will never break.

Your helpers like it because it saves time and brings a better result. It gives you a chance at more jobs and keeps your shop busy the whole year with permanently satisfied customers.

KESTER SOLDER COMPANY
4241 Wrightwood Ave., Chicago
Eastern Plant, Newark, New Jersey
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KESTER FLUX-CORE SOLDER
Acid-Core • Paste-Core • Rosin-Core

Find out what
THE MEYER FURNACE CO.
(Makers of WEIR Furnaces in Peoria, Ill.)
are doing about
AIR CONDITIONING
An inquiry will bring you valuable information

FURNACE REPAIRS

To Fit All Makes of Furnaces

Quick Service by Express Freight or Truck

SEND FOR OUR NEW CATALOG
THE PEERLESS FOUNDRY *COMPANY*
INDIANAPOLIS INDIANA

News Items . . . . . .

Over 200 Manufacturers of Oil Burners

The September issue of FUEL OIL JOURNAL carries its fourth annual list of officers of active oil burner manufacturers and is longer than any of the three lists published in the past. In addition to giving the key executives of each company, the 1932 roster with over 200 manufacturers, includes in most cases, the kind of burner made by each company.

◆

New Oil Burning Furnace

George Evans, who has been manufacturing sheet metal products in Moline, Iowa, for some 17 years, announces that he has been experimenting with a personally designed oil burning furnace for several months and has now started production on the unit. The furnace has been tested in his own home, in his factory and in several local installations.

The manufacture will be conducted under the name of The George Evans Corp., of Moline, Iowa.

◆

Plan Permanent Stoker Exhibit

At a meeting of the recently organized Western Stoker Association, a committee was appointed to consider ways and means for providing in Salt Lake City, headquarters of the new association, a permanent exhibit of stokers, to be located in as strategic a point as possible in the city's business district. Members of this same association also are planning an extensive sales campaign this fall and winter in promoting the use of stokers. The new organization is composed of manufacturers and sales agencies of automatic coal stokers operating in Salt Lake City and vicinity.

◆

Petroleum Heat & Power Co. Opens Boston Branch

The Petroleum Heat & Power Co. of Stamford, Conn., has opened a factory branch sales office at 415 Boylston street, Boston, Mass., to serve the Boston territory. J. Henry Brody is sales manager of the new branch, and J. L. Miller is his assistant. A. L. Jewett, J. A. Slaman, J. R. Couthard, A. C. Hatch and P. B. Waters are also associated with this branch.

◆

Laclede Stoker Co. Expanding

The Laclede Stoker Co. of St. Louis, Mo., has been incorporated with a capital of $300,000 to take over and expand the company of the same name at 4438 Hunt street, St. Louis. Henry F. Welch is at the head of the new company.

◆

New Chicago Burner Distributor

The Heating and Ventilating Co., Old Colony building, Chicago, has beeen appointed distributor for the midwest region for the Uni-Fire oil burner of Detroit.

Heating and Ventilating Co., has been jobbing heating appliances for some time. The company will now apoint local dealers throughout the Chicago territory.

Uni-Fire was first offered in 1931. The burner sells in the $200 factory list price, Features listed for the burner are—one moving part, non-carbonizing cup, ash pit installation, quietness, radiant flame of the wall-wiping type.

New Literature . . . .

Leaflet on Ventilation

A four-page leaflet showing ventilation items such as gravity ventilators, blowers, exhausters, heat circulators, rotary ventilators, chimney ventilators and fan ventilators has been prepared by the J. M. and L. A. Osborn Company.

Each item is arranged for good descriptive display and is accompanied by text explaining construction and application.

Copies of the leaflet can be secured from the Osborn company through any one of their local branches.

◆

Stainless Steel Sheet Booklet

What can and can't be done and expected of stainless steel sheets, as well as information on how to fabricate, anneal, weld, draw, rivet, solder and other processes is elaborately presented in a new booklet issued by American Sheet and Tin Plate Company, Frick Building, Pittsburgh, Penna.

These various discussions of processing are illustrated and covered in detail in the various chapters.

Contractors who are using stainless steel and who require the most up-to-date information on its use and handling can get a copy of this book by writing the company.

◆

New Gas Furnace Bulletin

A bulletin showing in detail a line of new square cased gas furnaces has been prepared by the Payne Furnace and Supply Company, 336 North Foothill Road, Beverley Hills, California.

This new line of furnaces consists of two types—one for mild climates; the other for cold climates. The difference lies in the construction which for cold climates makes direct returns possible while in mild climates circulation off the floor of the basement can be used.

The furnaces range from 30,000 to 180,000 B.t.u. input capacity. The furnaces are also divided into single and double burner units which may be hooked together to secure any input capacity required. Casings will be furnished in either plain galvanized iron or in a special orange colored crinkle finish where the heater is to be placed in or near a basement recreation room.

The bulletin describes the units in detail, shows all construction and operating features and gives complete tables of dimensions, ratings, etc. In addition, the general application of gas-fired furnaces to various conditions is discussed.

Copies of this bulletin may be secured from the Payne company.

◆

Automatic Control Leaflet

A four-page leaflet describing the full line of automatic controls for air conditioning systems has been prepared by Automatic Products Company, 121 North Broadway, Milwaukee, Wisconsin.

Among the items shown are the humidity regulator, solenoid water valve, water regulator, etc. Full descriptions of each item are included.

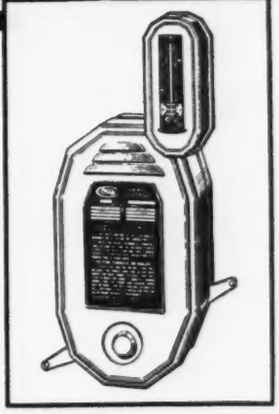
Copies of the leaflet can be secured from the company.

◆

September Price List Available

A new price list, effective September 1, 1932, is being mailed by the R. J. Schwab and Sons Company, 605 South First Street, Milwaukee, Wisconsin.

The list contains prices on all the company's varied line of jobbed and manufactured equipment. Copies can be had from the company.



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Heat Control

Automatically opens and closes the draft and check doors of hard fuel heating plants at the demands of a thermostat. Provides COMFORT, CONVENIENCE, HEALTH, SAFETY, and FUEL ECONOMY.

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97 out of every 100 homes are prospects.

PROFITS

It carries a long margin of profit—sufficient to pay for aggressive selling effort and still allow a liberal net profit.

DEPENDABILITY

60,000 units giving satisfactory service. —Listed as standard by The Underwriter's Laboratories. —Approved by the Anthracite Institute and backed by thirty years of electrical manufacturing experience.

This is an opportunity. There is a demand for automatic heat. Supply that demand with Cook Heat Control.

WRITE TODAY

for our complete merchandising plan on Cook Heat Control, Limit Control, Relays, Electric Clock Thermostat, Stoker Controls, etc.

COOK ELECTRIC COMPANY
2706 SOUTHPORT AVE. CHICAGO, ILLINOIS

New List Prices
ON
UNOS

Write your jobber for the lowered 1932 prices on the improved UNO.

◆

Repricing gives all sizes —4 inches to 48 inches —at the lowest cost of all turbines.

◆

Make EXTRA PROFIT . . . and please your customer.

Sure as sunrise . . . No oiling . . . No greasing . . . Wind driven . . . Powerful suction . . . Electric welded . . . Silent . . . No down drafts . . . Rain proof.

UNO VENTILATOR CO.
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BLOWERS-
FURNACE FANS
MOTORS & CONTROLS

"Only the Best"

For the furnace manufacturer and sheet metal contractor Peerless provides complete units or parts for warm air fan and blower systems. Special equipment designed and built to specifications. Write for catalog.

THE PEERLESS ELECTRIC COMPANY, Established 1893
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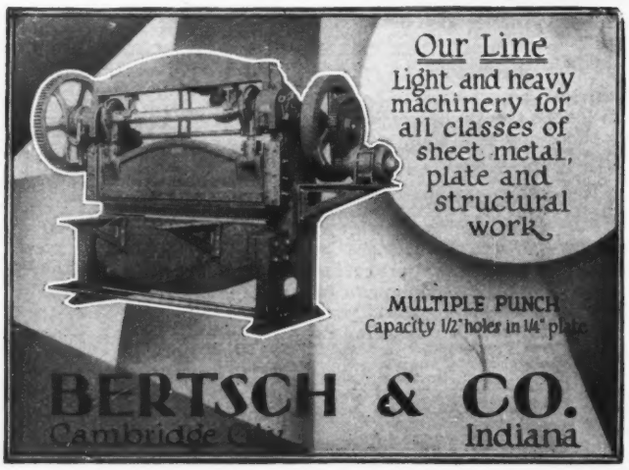
WARREN, OHIO

Complete Engineering Service for the Asking


Our Line
Light and heavy machinery for all classes of sheet metal, plate and structural work
MULTIPLE PUNCH
Capacity 1/2" holes in 1/4" plate
BERTSCH & CO.
Cambridge City
Indiana

FURNACE & BOILER REPAIRS

GRATE BARS AND RESTS, FIRE POTS, FEED SECTIONS, FIRE BRICK, ETC.

IN STOCK . . . READY FOR IMMEDIATE SHIPMENT

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312-18 NO. THIRD ST. . . . ST. LOUIS.

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RETAIL
H&C
AUTOMATIC
HEAT CONTROL
Furnished Complete with every necessary fitting.
Head and shoulders above anything in its price class.
Offers the greatest profit opportunity in the heat control field. Investigate it at once.
Handled by leading jobbers.
HART & COOLEY MFG. CO.
61 W. Kinzie St.
CHICAGO, ILL.

BUYERS' GUIDE

AIR CLEANERS
American Air Filter Co., Inc., Louisville, Ky.
Kleenaire Filter Co., Stevens Point, Wis.
Lakeside Co., Hermansville, Mich.
Owens-Illinois Glass Co., Toledo, Ohio

AIR CONDITIONERS
(See Unit Air Conditioners)

AIR WASHERS
Gehri & Co., Inc., A., Tacoma, Wash.
Health Air Systems, Ann Arbor, Mich.
Hess Warming & Vent. Co., Chicago, Ill.
Lakeside Co., Hermansville, Mich.
Meyer Furnace Co., The, Peoria, Illinois.

BLAST GATES
Berger Bros. Co., Philadelphia, Pa.

BLOWERS
Bishop & Babcock Sales Co., The, Cleveland, Ohio.
Gehri & Co., Inc., A., Tacoma, Wash.
Health-Air Systems, Ann Arbor, Mich.
Hess Warming & Vent. Co., Chicago, Ill.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lakeside Co., Hermansville, Mich.
Meyer Furnace Co., The, Peoria, Illinois.
Peerless Electric Co., Warren, Ohio

BRAKES—BENDING
Dreis & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.

BRAKES—CORNICE
Dreis & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.

BRASS AND COPPER
American Brass Co., Waterbury, Conn.
Revere Copper and Brass, Inc., Rome, N. Y.

BURNERS, GAS CONVERSION
Bialosky Bros. & Co., The, Cleveland.

CASING RINGS—FURNACE
Forest City Foundries Co., Cleveland, Ohio.
Peerless Foundry Co., Inc., Indianapolis, Ind.

CASTINGS—MALLEABLE
Berger Bros. Co., Philadelphia, Pa.
Fanner Mfg. Company, Cleveland, Ohio

CEILINGS—METAL
Canton Steel Ceiling Co., Canton, Ohio
Globe Iron Roofing and Corrugating Company, Cincinnati, Ohio
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CEMENT—FURNACE
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Northwestern Stove Repair Co., Chicago.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CHAIN—FURNACE
Hart & Cooley Mfg. Co., Chicago, Ill.
Russell Mfg. Co., Inc., The John M., Naugatuck, Conn.

CHAPLETS
Fanner Mfg. Company, Cleveland, Ohio

CLEANERS—FURNACE VACUUM
Baker Furnace Co., Toledo, Ohio.
Breuer Elec. Mfg. Co., Chicago, Ill.
National Super Service Co., Toledo, Ohio
Northwestern Stove Repair Co., Chicago.
Ramey Mfg. Co., The, Columbus, Ohio.

CONDUCTOR ELBOWS AND SHOES
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CONDUCTOR FITTINGS
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CONDUCTOR PIPE
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CONTROLS, FURNACE
Automatic Humidifier Sales Co., Detroit, Mich.
Peerless Electric Co., Warren, Ohio

COPPER
American Brass Co., Waterbury, Conn.
Brown Wales Co., Boston, Mass.
Revere Copper & Brass, Inc., Rome, N. Y.

CORNICES
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

CRIMPING MACHINES
Bertsch & Company, Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

CUT-OFFS—RAIN WATER
Barnes Metal Products Co., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

DAMPERS—QUADRANTS—ACCESSORIES
Aeolus Dickinson, Chicago, Ill.
Hart & Cooley Mfg. Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City
Parker-Kalon Corp., New York, N. Y.
Young Ventilating Co., Cleveland, Ohio

DIFFUSERS—AIR DUCT
Aeolus Dickinson, Chicago, Ill.

DRIVE SCREWS—HARDENED METALLIC
Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York

EAVES TROUGH
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Globe Iron Roofing & Corrugating Co. Cincinnati, Ohio
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

EAVES TROUGH HANGERS
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City

FANS, DRAFT
Vacu-Draft Corp., Muncie, Ind.

FANS—FURNACE
A-C Mfg. Company, Pontiac, Illinois
Gehri & Co., Inc., A., Tacoma, Wash.
Roan Mfg. Co., Racine, Wis
Peerless Electric Co., Warren, Ohio

BUYERS' GUIDE

FILTERS—AIR

American Air Filter Co., Inc., Louisville, Ky.
Kleenaire Filter Co., Stevens Point, Wis.
Lakeside Co., Hermansville, Mich.
Owens-Illinois Glass Co., Toledo, Ohio

FILTERS—FURNACE

American Air Filter Co., Inc., Louisville, Ky.
Gehri & Co., Inc., A., Tacoma, Wash.
Kleenaire Filter Co., Stevens Point, Wis.
Lakeside Co., Hermansville, Mich.
Owens-Illinois Glass Co., Toledo, Ohio

FITTINGS, PIPE, GAS STOVE

Fanner Mfg. Co., Cleveland, Ohio.

FLUXES—SOLDERING

Kester Solder Company, Chicago, Ill.

FORMING ROLLS

Bertsch & Company, Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

FURNACE CLEANERS

(See Cleaners—Furnace Vacuum)

FURNACES FOR GAS OR OIL

Health-Air Systems, Ann Arbor, Mich.
Henry Furnace & Foundry Co., Cleveland, Ohio.

FURNACES—GAS

Forest City Foundries Co., Cleveland, Ohio
Henry Furnace & Foundry Co., Cleveland, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Meyer Furnace Company, Peoria, Ill.
Payne Furnace and Supply Co., Beverly Hills, Calif.

FURNACES—GAS AUXILIARY

Forest City Foundries Co., Cleveland, Ohio

FURNACES, GAS SOLDERING

Interstate Machinery Co., Chicago.

FURNACES—OIL BURNING

Meyer Furnace Co., The, Peoria, Illinois.
Motor Wheel Corp., Heater Div., Lansing, Mich.
Peerless Foundry Co., Indianapolis, Ind.

FURNACES—WARM AIR

(See Also Unit Air Conditioners)

Agricola Furnace Co., Gadsden, Ala.
Andes Range & Furnace Corp., Geneva, N. Y.
Deshler Foundry & Machine Works, Deshler, Ohio
Forest City Foundries Co., Cleveland, Ohio
Fox Furnace Co., The, Elyria, Ohio.
Health-Air Systems, Ann Arbor, Mich.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Hess Warming & Vent. Co., Chicago, Ill.
Lennox Furnace Co., Marshalltown, Iowa
May-Fiebeger Co., The, Newark, Ohio.
Meyer Furnace Co., The, Peoria, Illinois
Motor Wheel Corp., Heater Div., Lansing, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Calif.
Peerless Foundry Co., Indianapolis, Ind.

GRILLES

Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Mfg. Co., Chicago, Ill.
Independent Register & Mfg. Co., Cleveland, Ohio.
Meyer & Bro. Co., F., Peoria, Ill.
Rock Island Register Co., Rock Island, Ill.

GUARDS—MACHINE AND BELT

Harrington & King Perforating Co., Chicago, Ill.

HANDLES—BOILER

Berger Bros. Co., Philadelphia, Pa.

HANDLES—FURNACE DOOR

Fanner Mfg. Co., Cleveland, Ohio.

HANDLES—SOLDERING IRON

Parker-Kalon Corp., New York, N. Y.

HEATERS—CABINET

Agricola Furnace Co., Gadsden, Ala.
Motor Wheel Corp., Heater Div., Lansing, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Calif.

HEATERS—GAS CABINET

Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Calif.

HEATERS—SCHOOL ROOM

May-Fiebeger Co., The, Newark, Ohio.
Meyer Furnace Company, The, Peoria, Ill.
Peerless Foundry Co., Indianapolis, Ind.

HUMIDIFIERS

Automatic Humidifier Sales Co., Detroit, Mich.
Clarm Mechanical Devices Co., Lima, Ohio
Columbus Humidifier Co., Columbus, Ohio.
Hess Warming & Vent. Co., Chicago, Ill.
Lakeside Co., Hermansville, Mich.
Meyer & Bro. Company, F., Peoria, Ill.
Sallada Mfg. Co., Minneapolis, Minn.
Skuttle Co., The J. L., Dowagiac, Mich.

MACHINERY—CULVERT

Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

MACHINERY—REBUILT AND USED

Interstate Machinery Co., Chicago, Ill.

MACHINES AND TOOLS—SHEET METAL WORKING

Bertsch & Company, Cambridge City, Ind.
Brown Wales Co., Boston, Mass.
Dreis & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa.
Parker-Kalon Corp., New York, N. Y.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.

METAL LATH—EXPANDED

Barnes Metal Products Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo.

MITERS

Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo.

NAILS—HARDENED MASONRY

Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York, N. Y.

PERFORATED METALS

Harrington & King Perforating Co., Chicago, Ill.

PIPE AND FITTINGS—FURNACE

Dieckmann Co., The Ferdinand, Cincinnati, Ohio
Henry Furnace & Fdy. Co., Cleveland, Ohio.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Peerless Foundry Co., Indianapolis, Ind.

POKERS—FURNACE

Fanner Mfg. Co., Cleveland, Ohio.
Henry Furnace & Foundry Co., Cleveland, Ohio.
Independent Reg. & Mfg. Co., Cleveland, Ohio.

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FURNACE ACCESSORIES

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FOR industrial buildings, schools, homes, theaters, etc. Made in 14 different metals. Constant ventilation — no noise — no upkeep.

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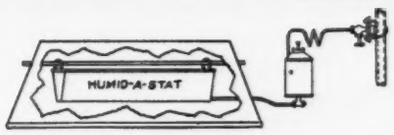

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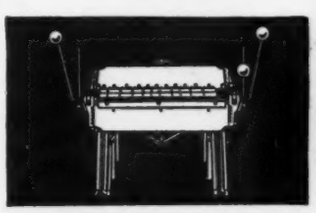
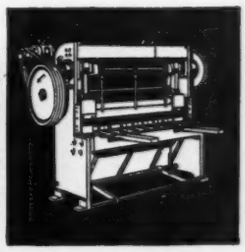
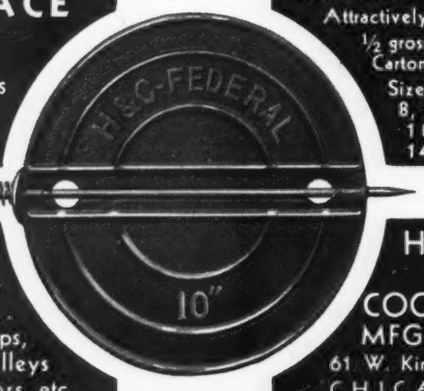




Box and Pan Brake Power Squaring Shear

STEEL BRAKES—PRESSES—SHEARS
DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO

The ACE of Dampers



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Sizes: 6, 7, 8, 8½, 9, 10, 12, 14 inches

Also a Complete Line of . . . Clips & Tips, Chain, Pulleys Regulators, etc.

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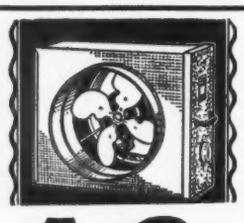
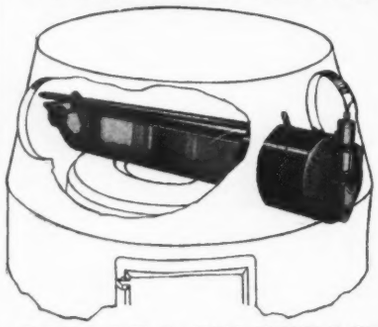


A-C Thermostatically Controlled Automatic HEAT BOOSTER

Talk Heat Boosters in connection with repair work. Talk about the A-C, its advantages to users, and remember its profit possibilities to you. Furnace repairing and A-C Booster profits go hand in hand. Write for our story and tell it to your prospects.

A-C MANUFACTURING CO.
417 Sherman Ave.,
Pontiac, Ill.

SIMPLEX HUMIDIFIER



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IT'S TRULY AUTOMATIC
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Write for our dealer, jobber or manufacturer proposition.

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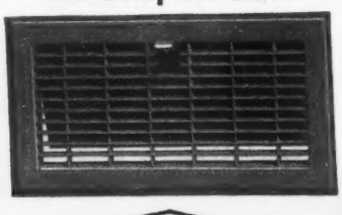
720 South 4th St., Minneapolis, Minn.

FORCED AIR REGISTERS
The Complete Line



INDEPENDENT
INDEPENDENT REGISTER & MFG. CO.
3741 East 93rd Street . . . . . Cleveland, Ohio

BUYERS' GUIDE

PRESSES
Dries & Krump Mfg. Co., Chicago, Ill.

PULLEYS—FURNACE
Hart & Cooley Mfg. Co., Chicago, Ill.

PUNCHES
Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York, N. Y.
W. A. Whitney Mfg. Co., Rockford, Ill.

PUNCHES—COMBINATION BENCH AND HAND
Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York, N. Y.

PUNCHES—HAND
Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York, N. Y.
W. A. Whitney Mfg. Co., Rockford, Ill.

RADIATOR CABINETS
Hart & Cooley Mfg. Co., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Revere Copper & Brass, Inc., New York City.

REGISTERS
Forest City Foundries Co., Cleveland, Ohio.
Hart & Cooley Mfg. Co., Chicago, Ill.
Henry Furnace & Fdy. Co., Cleveland, Ohio.
Independent Register & Mfg. Co., Cleveland, Ohio.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Peerless Foundry Co., Indianapolis, Ind.

REGISTERS—WOOD
Auer Register Co., Cleveland, Ohio.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

REGULATORS AND LOCKS, VOLUME DAMPER
Young Ventilating Co., The, Cleveland, O.

REGULATORS—AUTOMATIC HEAT
Cook Electric Co., Chicago, Ill.
Hart & Cooley Mfg. Co., Chicago, Ill.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

REPAIRS—STOVE AND FURNACE
Brauer Supply Co., A. G., St. Louis, Mo.
Des Moines Stove Repair Co., Des Moines, Iowa.
National Foundry & Furnace Co., Dayton, Ohio.
Northwestern Stove Repair Co., Chicago, Ill.
Peerless Foundry Co., Indianapolis, Ind.

RIDGING
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

RINGS—FURNACE CASING
Forest City Foundries Co., Cleveland, Ohio.

ROOF FLASHING
Barnes Metal Products Co., Chicago, Ill.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

ROOFING—IRON AND STEEL
American Rolling Mill Co., Middletown, Ohio.
Barnes Metal Products Co., Chicago, Ill.
Brown Wales Co., Boston, Mass.
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio.
Inland Steel Company, Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., The, Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

ROOFING—TIN AND TERNE
Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

RUBBISH BURNERS
Hart & Cooley Mfg. Co., Chicago, Ill.

SCREWS—HARDENED METALLIC DRIVE
Interstate Machinery Co., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Parker-Kalon Corp., New York City.

SCREWS—HARDENED SELF TAPPING SHEET METAL
Interstate Machinery Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Parker-Kalon Corp., New York City.

SCREENS—PERFORATED METAL
Harrington & King Perforating Co., Chicago, Ill.

SCUPPERS
Aeolus Dickinson, Chicago, Ill.

SHEARS—HAND AND POWER
Dries & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa.
Viking Shear Company, Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill

SHEET METAL SCREWS—HARDENED, SELF-TAPPING
Interstate Machinery Co., Chicago, Ill.
Parker-Kalon Corp., New York City.

SHEETS—ALLOY
Inland Steel Company, Chicago, Ill.
International Nickel Co., New York, N. Y.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

SHEETS—BLACK, CORRUGATED, GALVANIZED
American Rolling Mill Co., Middletown, Ohio.
Brown Wales Co., Boston, Mass.
Granite City Steel Co., Granite City, Ill.
Inland Steel Company, Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

SHEETS—COPPER
American Brass Co., Waterbury, Conn.
Brown Wales Co., Boston, Mass.
Revere Copper & Brass, Inc., Rome, N. Y.

BUYERS' GUIDE

SHEETS—COPPER BEARING STEEL

American Rolling Mill Co., Middletown, O.
Granite City Steel Co., Granite City, Ill
Inland Steel Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

SHEETS—COPPER (LEAD COATED)

American Brass Co., Waterbury, Conn.
Revere Copper & Brass, Inc., Rome, N. Y.

SHEETS—IRON

American Rolling Mill Co., Middletown, O.
Brown Wales Co., Boston, Mass.
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.
Superior
Superior Sheet Steel Co., Canton, Ohio.

SHEETS—MONEL METAL

International Nickel Co., New York.

SHEETS—NICKEL

International Nickel Co., New York.

SHEETS—PURE IRON COPPER ALLOY

Inland Steel Co., Chicago, Ill.
Newport Rolling Mill Co., Newport, Ky.

SHEETS—REFINED OPEN HEARTH IRON

American Rolling Mill Co., Middletown, O.
Republic Steel Corp., Youngstown, Ohio.

SHEETS—SPECIAL FINISH

American Rolling Mill Co., Middletown, O.
Inland Steel Company, Chicago, Ill.
Newport Rolling Mill Co., Newport, Ky.
Republic Steel Corp., Youngstown, Ohio.

SHEETS, STAINLESS STEEL

Brown Wales Co., Boston, Mass.
Republic Steel Corp., Youngstown, Ohio.

SHINGLES AND TILE—METAL

Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

SKYLIGHTS

Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

SNOW GUARDS

Berger Bros. Co., Philadelphia, Pa.

SOLDER

Brown Wales Co., Boston, Mass.
Kester Solder Co., Chicago, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

SOLDER—ACID CORE

Kester Solder Co., Chicago, Ill.

SOLDER—ROSIN CORE

Kester Solder Co., Chicago, Ill.

SOLDER—SELF-FLUXING

Kester Solder Co., Chicago, Ill.

STARS—HARD IRON CLEANING

Fanner Mfg. Company, Cleveland, Ohio.

STOKERS

Auto-Home Stoker Corp., The, Chicago

STOVE PIPE AND FITTINGS

Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo

STOVE AND FURNACE TRIMMINGS

Fanner Mfg. Co., Cleveland, Ohio.

STRAINERS—ROOF

Barnes Metal Products Co., Chicago, Ill.

STRAPS—ORNAMENTAL PIPE

Barnes Metal Products Co., Chicago, Ill.

TINPLATE

Berger Bros. Co., Philadelphia, Pa.
Brown Wales Co., Boston, Mass.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Republic Steel Corp., Youngstown, Ohio.

TOOLS—TINSMITH'S

(See Machines & Tools—Tinsmith's)

TRIMMINGS, FURNACE

Fanner Mfg. Co., Cleveland, Ohio.

TRIMMINGS, INCINERATOR

Fanner Mfg. Co., Cleveland, Ohio.

UNIT AIR CONDITIONERS

Andes Range & Furnace Corp., Geneva, N. Y.
Forest City Foundries Co., Cleveland, O.
Fox Furnace Co., The, Elyria, Ohio.
Henry Furnace & Fdry. Co., Cleveland, O.
Health-Air Systems, Ann Arbor, Mich.
Hess Warming & Ventilating Co., Chicago, Ill.
Lakeside Co., Hermansville, Mich.
Lennox Furnace Co., Marshalltown, Iowa.
May-Fiebeger Company, Newark, Ohio.
Meyer Furnace Co., Peoria, Ill.
Motor Wheel Corp., Lansing, Mich.
Payne Furnace & Supply Co., Beverly Hills, Calif.

VACUUM CLEANERS—FURNACE

(See Cleaners—Furnace Vacuum)

VENTILATORS—CEILING

Hart & Cooley Mfg. Co., Chicago, Ill.
Henry Furnace & Fdy. Co., Cleveland, O.
Independent Reg. & Mfg. Co., Cleveland, Ohio.

VENTILATORS—FLOOR

Aeolus Dickinson, Chicago, Ill.

VENTILATORS—ROOF

Aeolus Dickinson, Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Jordan & Co., Paul R., Indianapolis, Ind.
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Milwaukee, Canton, Chicago, LaCrosse, Kansas City.
Osborn Co., The J. M. & L. A., Detroit, Cleveland, Buffalo
Uno Ventilator Co., Cliftondale, Mass.

WELDERS, SPOT

Interstate Machinery Co., Chicago.

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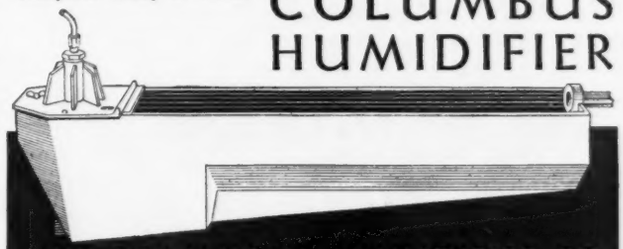

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The TORNADO gets you into the basement where it is easy to sell repairs and new furnaces. And you make a profit on the cleaning job too!

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Sash Chain

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Tin
Solder
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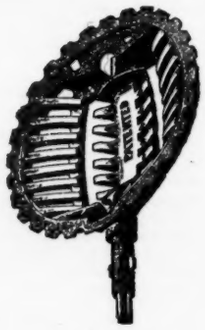
A Complete Line *of* Parts *at factory prices*



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Comfort	Homer	Mueller	Victory
Empire	Ideal	Niagara	Wayne
Eureka	International	Ottawa	Weir
Faultless	Jewel	Peninsular	Welcome
Favorite	Kalamazoo	Perfect	Williamson
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Follansbee	Lackawanna	Princess	All Others
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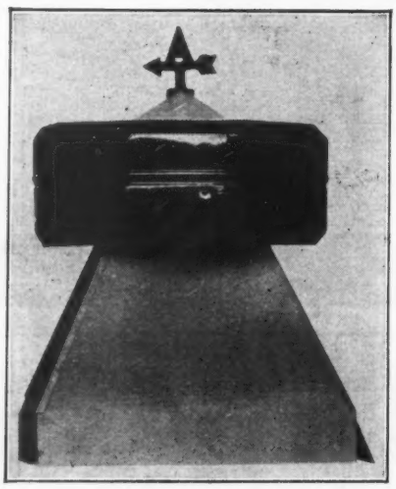
Boiler Parts.

American	Winchester	Ideal—All Types	Pebco	Richardson
Arco	Continental	Imperial	Pierce	Royal
Arcola	Floral City	Mueller	Radiant	Vecto
Capitol-Solar				And All Others

The JORDAN ATTIC VENTILATOR



Straight flaring base. Sets low and looks well. Operated by gravity and wind action.

The Jordan Attic Ventilator presents an opportunity which offers profits to you *right now*. Write for information. There is summer business to be had and you can get it.

Also Fan Ventilators, Rotary Ventilators, Stationary Ventilators, Wall Exhaust Fans, etc.

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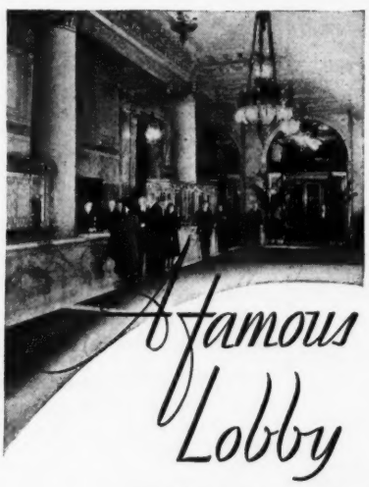
631 S. Delaware St., Indianapolis, Ind.



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PHILADELPHIA
CLAUDE H. BENNETT, *Gen. Mgr.*

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FURNACE DEPARTMENT SALES MANAGER

National manufacturer of cast and steel warm air furnaces wants experienced man to take complete charge of entire operation of Furnace Department. Give full particulars first reply as to experience, references, etc. Address Key 182, "American Artisan," 1900 Prairie Avenue, Chicago.

SALESMEN CALLING ON FURNACE manufacturers and jobbers will establish a permanent income by selling METALUTE, the all iron furnace cement which is proving superior to the old style mud cements. COLOR-BESTOS Furnace Paint Insulation. INSA-LUTE (Liquid Porcelain) which is used by hundreds of installers for double sealing leaky furnaces without tearing them down, and KNO-LEAK Pipe Dope Compound, approved by Medical Societies because it is free from poisonous white lead. TECHNICAL PRODUCTS CO., Pittsburgh (15) Penna.

DESIGNER WANTED—AN OLD, ESTABlished, well-known stove company wants a successful designer with years of experience. State age, complete experience and any references. Address Key 181, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

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SITUATION WANTED—CAN STRENGTHEN your sales force. Seventeen years with one furnace and stove manufacturer, as their Ohio district manager. Had charge of the sales, collection and advertising for that division. Have complete knowledge of the heating business, standard code, etc. Operating my own business at present; however, prefer traveling again. Can furnish highest reference as to selling ability, character. Prefer Ohio; however am willing to work your toughest territory. Address Key 187, "American Artisan," 1900 Prairie Avenue, Chicago.

SITUATION WANTED—SHEET METAL worker desires connection, preferably Illinois. Experienced in all lines of sheet metal work. 34 years old. Regular habits. Address Key 176, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

EXPERIENCED SHEET METAL SALESman wants position representing responsible manufacturer in the state of Iowa. Address Key 177, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

CORRESPONDENCE SOLICITED WITH manufacturer developing or producing air conditioning units, or with furnace, sheet metal contractor who desires the services of a reliable man. 20 years' practical experience in engineering, estimating and sales. Address Key 180, "American Artisan," 1900 Prairie Ave., Chicago, Illinois.

WANTED—JOB BY COMPETENT COMbination plumber and tinner, 16 years' experience, full particulars in future correspondence. Address H. W. Chambers, Shellrock, Iowa.

EXPERIENCED FURNACE SALESMAN would like position representing responsible manufacturer in Wisconsin. Address Key 172, "American Artisan," 1900 Prairie Avenue, Chicago.

SITUATION WANTED—PLUMBER, heating and sheet metal man, wants good position, married. Can go to work at once. Address H. C. Hughes, Forest City, Iowa.

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FOR SALE—RADIATOR AND WELDING shop in one of the best towns of 8,000 population in Arkansas at bargain. Address Key 174, "American Artisan," 1900 Prairie Avenue, Chicago.

FOR SALE—GENERAL SHEET METAL and warm air heating shop, the only exclusive shop of its kind in a town of 12,000 population, large trade territory. This is a real opportunity for someone who can do good work and uphold a good reputation. Will sell at inventory, which will run around $2500.00. This is no depression offer. Do not answer unless you can handle this. Address Key 183, "American Artisan," 1900 Prairie Avenue, Chicago.

CHRISTIE FURNACE CLEANER. LARGE size. Used twelve times. Perfect shape, $75.00. Address Key 185, "American Artisan," 1900 Prairie Avenue, Chicago.

FOR SALE——ONE No. 2 RYERSON serpentine shear, Belt Driven. Capacity of cutting 10 ga. material. $125.00. Slightly used. Address E. A. Knabe, Rock Falls, Illinois.

FOR SALE—COMPLETE HARDWARE and sheet metal business in a town of 15,000 in Northern Illinois. Doing all sheet metal and maintenance for several large factories, also the agency of the Timken Silent Automatic Oil Burner and MW hot water heater of which we have a large business built up. A good business for some sheet metal and hardware man who wants to get out of the large city. Address Key 174, "American Artisan," 1900 Prairie Avenue, Chicago.

AIR-O-VAC FURNACE CLEANER WITH tools. New condition. Cost $350.00. First check for half takes it. Write No. 2101 East Wood Place, Milwaukee, Wis.

FOR SALE—FURNACE AND SHEET metal shop. Price is reasonable. Write for further particulars. Address W. A. Halbleib, Marengo, Illinois.

FOR SALE—OLD ESTABLISHED TIN shop in town of 800 in central Illinois. German community. Death reason for selling. Will sell all or part; no reasonable offer refused. Address Eugene Moyemont, Odell, Illinois.

FOR SALE—FURNACE AND SHEET metal business in town of North East, Erie County, Pennsylvania. Population of town about 3,500; a prosperous community. Business well established. Stock and tools for sale cheap. Reason for selling—poor health. Address Eldon Denton, North East, Erie County, Pennsylvania.

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WANTED—BY A PRACTICAL TINNER and plumber an opportunity to buy one-half interest in a good plumbing and tinning business. Address Key 184, "American Artisan," 1900 Prairie Avenue, Chicago.

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WANTED—ONE SET OF 40" OR 42" forming rolls. Must be in first class condition and a bargain. Address Key 171, "American Artisan," 1900 Prairie Avenue, Chicago.

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From mud cements to META LUTE Plastic Iron Cement, a powdered metal compound that is mixed on the job. Permits immediate firing. It's different.

COLOR-BESTOS—Asbestos in Paint Form — Fire-proof, oil-proof, acid-proof. Double seals leaky furnaces without resetting and better than asbestos paper for metal surfaces.

Special Offer—Gallon of each and free catalog on cementing research, all for $5.00.

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Pittsburgh (Sharpsburg Station) Pennsylvania

Makers of INSA-LUTE

FINANCIALLY RESPONSIBLE **PARTY with very broad experience in the design, manufacture and sale of steel furnaces, cast iron furnaces and steam and hot water boilers, will consider executive or managerial opening with a reliable concern. Address Key 186, "American Artisan," 1900 Prairie Avenue, Chicago.**

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PROFITABLE BUSINESS

● **Demand for Monel Metal equipment is constantly growing. In every community there are homes, schools, restaurants or factories offering a good market for many different kinds of Monel Metal jobs.**

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MONEL METAL
NICKEL ALLOYS PERFORM BETTER LONGER

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The oversize combustion chamber—found only in the X-L-ALL gives greater heating area and a saving of fuel, which are big items.

It is a pleasure to sell X-L-ALL Steel Furnaces and meet the users later and hear them praise the service and satisfaction they are getting.

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Lima, Ohio

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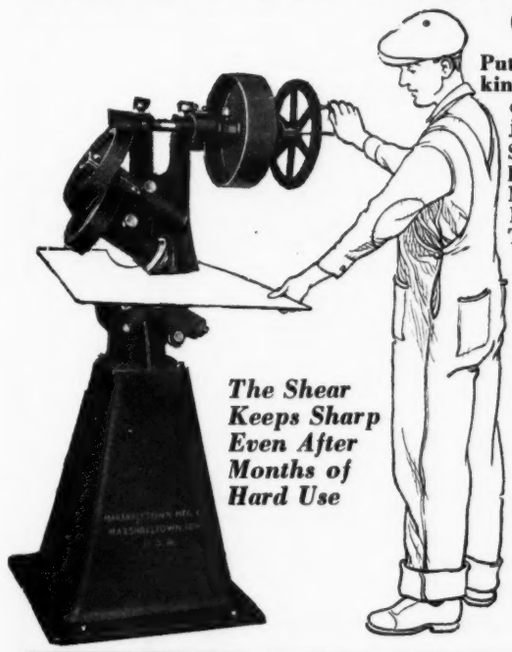
MARSHALLTOWN THE MARSHALLTOWN LINE **SHEARS**

LET MARSHALLTOWN SHEARS CUT YOUR LABOR COSTS



Put the right kind of machine on the right job. Save time and labor costs. Make it a MARSHALLTOWN.

Let the Catalog Tell the Story—Write for It Now

The Shear Keeps Sharp Even After Months of Hard Use

There is a MARSHALLTOWN for every use. Hand — Motor — and Belt Power.

MARSHALLTOWN MFG. CO. MARSHALLTOWN IOWA

Get BETTER Repairs and Get Them QUICKER

When your customers want stove, furnace or boiler replacement parts, they want them in a *big hurry*. The Des Moines Stove Repair Company gives you prompt delivery on repairs that fit. We operate our own foundry. We carry made-up parts and patterns for practically every stove, furnace or boiler used in the Central West. And because of these reasons we can ship you almost any repair part the very same day an order comes into our office.

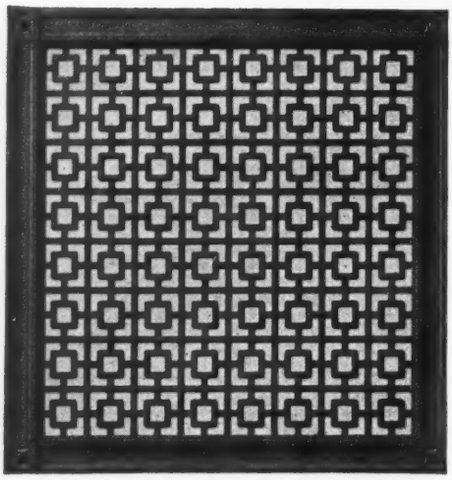
A Pot and Grate for Every Make Since 1869

Send us your replacement parts business this year and see exactly why so many dealers rely upon us for all their repairs.

DES MOINES STOVE REPAIR COMPANY

Des Moines Iowa

PERFORATED METALS



Send us your specifications for prices on any kind of Perforated Metal.

for EVERY PURPOSE

ARCHITECTURAL GRILLES

You will find our Grilles in modern Schools, Churches, Public Buildings and Homes. We have many beautiful designs from which to select.

"GRILFRAME" enhances the beauty of any design Grille by the addition of a border frame of steel. Write for detailed information.

SAFETY GUARDS—if made from our perforated steel sheets and according to our method are really safe.

PERFORATED METAL of every sort for all uses.

THE HARRINGTON & KING PERFORATING CO.

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Have Your Trunk Ducts and Branches Designed by Overton for 40c Per Warm Air Grille!

Dealers can save from $50.00 to $100.00 on each job in material and labor alone, through using scientifically designed trunk lines and branches. The time saved in an attempt to balance a poorly designed system will more than pay for the cost of my engineering service.

NOTE THESE PRICES!

RESIDENCES

Up to and including 5 rooms	$1.10 per room
5 to 9 rooms inclusive	$1.00 per room
10 to 15 rooms inclusive	$0.85 per room
16 to 20 rooms inclusive	$0.80 per room
21 rooms and over	$0.75 per room

CHURCHES

Up to and including 50,000 cu. ft. gross content	$0.12 per 1,000 cu. ft.
50,000 cu. ft. and over	$0.10 per cu. ft.

SCHOOLS

20,000 to 50,000 cu. ft	$0.30 per 1,000 cu. ft.
50,000 to 70,000 cu. ft	$0.25 per 1,000 cu. ft.
70,000 to 100,000 cu. ft	$0.20 per 1,000 cu. ft.
100,000 cu. ft. and over	$0.15 per 1,000 cu. ft.

FACTORIES, GARAGES

Duct systems	$0.12 per 1,000 cu. ft. gross content
Unit heater systems	$0.10 per 1,000 cu. ft. gross content

SPECIAL NOTE

Where heating systems include filters, washers, temperature control as EXTRA EQUIPMENT—add 20 per cent to listed prices.

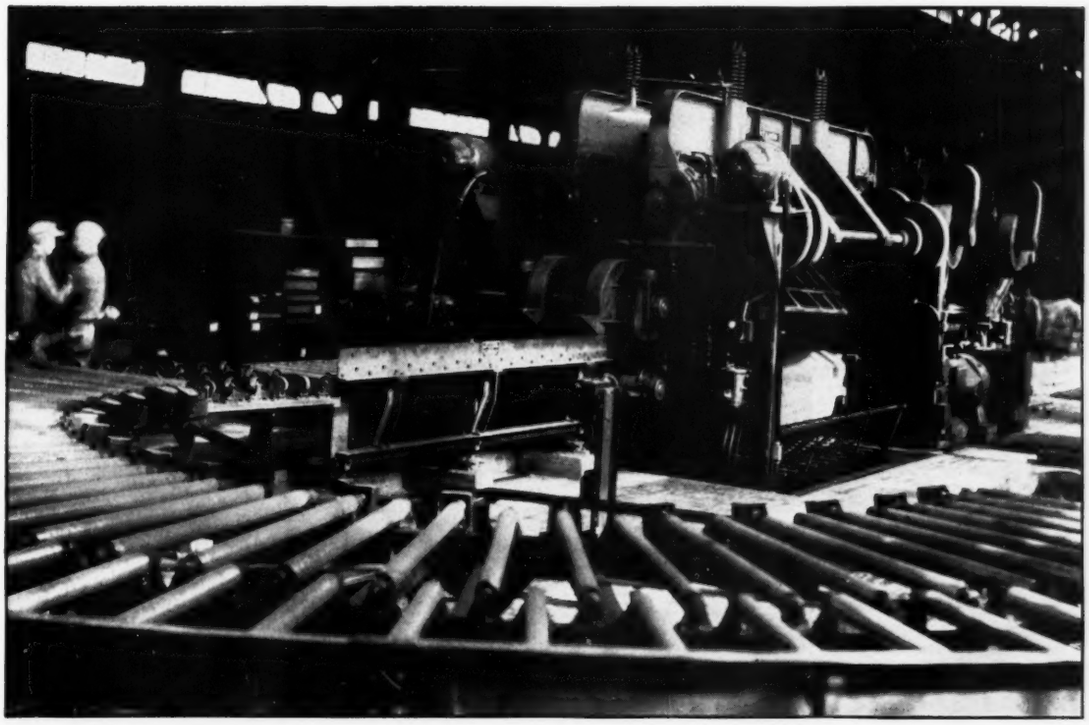
Where filters, washers, temperature controls are A PART OF THE HEATER AND ARE UNDER ONE CASING—listed prices apply.

For complete working plans detailing all trunk lines in ½-inch scale and showing details of elbows, stacks, branches, sections, cross sections of walls—add 50 per cent to list prices.

Add $0.01 per square foot of direct radiation for combination systems.

Also Steam, Hot Water, Vapor Systems—1c per Square Foot of Radiation

PLATTE OVERTON *Consulting Engineer* 5236 West Huron St., Chicago



$50,000 Worth of Shears

OVER the cooling table the sheets come, automatically, of course, turn the bend, and enter these shears that trim all four sides at once. Phing—and the job's done.

Typical of Newport's methods! Those things which are best done automatically are done automatically. Those things which are best done by hand are done by hand. *And never the twain shall meet.*

And the result of this stickling for what is best is shown in GOHI—in the sheet itself, in the results it gives you.

GOHI—Pure Iron with copper added—for almost a quarter of a century has proven itself the one low cost ferrous metal most suitable for building and fabricating purposes.

Long lasting because of its purity and alloyed copper, it is, at the same time, dense, homogeneous, ductile—easy to work, to bend, to cut, to shape, to weld.

Low in first cost, in fabrication cost, in last cost, GOHI adds value wherever it is used. Trust your reputation to GOHI—Genuine Open Hearth Iron—and you won't go wrong.

Write for the name of the Gohi Distributor near you

THE NEWPORT ROLLING MILL COMPANY, Newport, Ky.

GENUINE OPEN HEARTH IRON
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TRADE MARK
PURE IRON - COPPER ALLOY
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IT'S THE PURE IRON, ALLOYED WITH THE RIGHT AMOUNT OF COPPER, THAT GIVES GOHI ITS LASTING QUALITIES.

GOHI

PRONOUNCED "GO-HIGH"

SHEET METAL

Above: Plain "Twodrain" Roofing.
Below: Corrugated Sheets and Self Cap Roll Roofing.

Above: Ornamental "Twodrain" Roofing.
Below: Milcor Metal Spanish and American Tile.

THE *Milcor* line of metal roofing material represents the finest standard of quality and manufacture. In addition to the more common forms of materials such as Corrugated Sheets . . Self Cap Roll Roofing . . Standing Seam Roofing and many others, *Milcor* offers two outstanding favorites in "Twodrain" Channel Roofing and *Milcor* Metal tile.

These fine roofing materials have earned the confidence of builders everywhere. "Twodrain" as the name implies, is doubly protected against leakage by its two drain channels. It is made in both plain and ornamental designs. *Milcor* Metal Tile has the famous "Tite-Lock" edge.

A "same-day" shipment service is available on all *Milcor* products. Write to the nearest branch or sales office for a copy of the "*Milcor* Sheet Metal Handbook".

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Sales Offices: New York, 418 Pershing Square Building; Boston, Mass., 130 Federal Street; Atlanta, Ga., 304 Bona Allen Building; Los Angeles, Calif., 2207 Clinton Street; Little Rock, Ark., 104 W. Markham Street

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ANACONDA from mine to consumer

ARMCO Ingot Iron

TONCAN COPPER Molybdenum IRON

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